DADD Online Journal

Research to Practice

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.

DADD Online Journal

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

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On January 22 – 24, 2020, the Council for Exceptional Children Division on Autism and Developmental Disabilities (DADD) sponsored its Twenty-first International Conference: Research Informed Practice in Autism, Intellectual Disability and Developmental Disabilities. The conference was held at the Hyatt Regency in Sarasota, FL. 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.

As parents and school professionals are typically responsible for choosing or making available books for children and youth, it is important that guidelines for choosing literature that is inclusive and diverse are available. In the first article "Selecting and Using Children's Books with Authentic Representations of Characters with Developmental Disabilities" Tina Taylor, Kimberly Moss, Kellie Egan Brundage, and Mary Anne Prater describe a study that analyzed the characterization of individuals with developmental disabilities in books eligible for consideration for the 2020 Dolly Gray Children's Literature Award. The researchers used the Rating Scale for Quality Characterizations of Individuals with

Developmental Disabilities in Children's Literature to conduct content analyses of one graphic novel, 16 picture books, and 30 chapter books for their portrayals of characters with developmental disabilities. Results indicated that most characters portrayed have autism spectrum disorders and the majority are male; most characters are portrayed positively and realistically, and in the chapter books the characters generally have dynamic development. In order to support school professionals as they select and use literature for children and youth, the authors provide several teacher-friendly materials.

Since the Higher Education Opportunity Act (HEOA; 2008), there has been a steady increase in enrollment for students with IDD within inclusionary postsecondary education programs. In their article, "Factors Predicting the Successful Placement of Inclusive Post-Secondary Education Students in College Courses," Jennifer Graves, Michael Mackay, and William Hunter dive into the level of support from faculty to ensure students' successful placement in college courses. Using a Likert-type online survey, authors were able to glean information regarding instructor beliefs, institutional training, prior interactions with student with IDD, and instructors' perspectives on conditions that enable students will IDD to be successfully placed in postsecondary classrooms.

The next article details a study aimed at understanding factors that impact teacher success in working with students with ASD, Mary Haspel and Stacy Lauderdale-Littin describe the results of a series of surveys and questionnaires in the article "Autism in the Classroom: Teacher Self-Identified Factors Impacting Success." Authors used a demographic survey, a Teacher Perception of Administrative Support measure, and an open-ended job satisfaction questionnaire to understand the factors that will attract more

special education teachers to the field and provide them with the appropriate tools, as well as support, to work effectively with children with ASD. Results revealed responses related to special education teacher demographics, factors contributing to job satisfaction, challenges with paraprofessionals, and issues surrounding curriculum, programming, and administrative supports. The authors emphasize the need to support the factors relating to job satisfaction and address the challenges to attract and retain special education teachers to work with students with ASD.

Basic First Aid (BFA) is not only an important part of safety skills, but also can promote self-determination and independence for students with exceptionalities. In their article, Kelly Kearney and Jessica Bucholz describe the importance of BFA skills at home and in the workplace in this informative article. Through a vignette, the authors identified four fundamental steps grounded in research to promote an increased focus on teaching BFA skills to transition-aged students. The authors of "Teaching Basic First Aid Skills to Increase Inclusive Opportunities" provide brief and descriptive guidance in determining skills needed, selecting a research-based intervention to teach the skills, how to implement the intervention, and the importance of teaching the skill to mastery to increase inclusionary opportunities.

Communication between teachers and parents is particularly important for parents who have children who do not easily share information about their day, such as students with an autism spectrum disorder. While this communication is valued and elicited by parents of children with ASD, guidance on how to facilitate this communication is unclear. In their article "Social Validity of a School-Home Note Intervention for Students

with Autism Spectrum Disorders: Independent Stakeholder Perspectives," Samantha Goldman and Maria Mello used a qualitative research design to provide useful insight into parent perspectives on an existing home-parent note system. Through a series of focus groups, researchers interviewed parents of children with ASD who had not used this specific system previously, to provide insights into how this system might be received by parents of children with ASD. Parent suggestions and concerns are shared along with suggestions for future research from the authors.

In the next article, "Analysis of Personal Projects of Mothers and Fathers Having a Child with an Intellectual Disability," authors Lise Lachance, Suzie McKinnon, Alain Côté, Louis Cournoyer, Simon Grégoire, and Louis Richer sought to list and describe the main projects of mothers and fathers of a child with an ID. Additionally, they aimed to identify their underlying motivations, beliefs about them, perceived social support and affects aroused considering the various characteristics (e.g., constraints, opportunities) of their social environment. Through audio-recorded semi-structured 60-minute interviews, the perspectives from 47 women and 36 men from 49 families were collected using the personal project analysis. Parents categorized their *motivations* related to three cognitive dimensions (meaning, manageability, and social), and explained how they felt positive and/or negative emotions while they considered carrying out their projects. The authors detail the outcomes of the semi-structured interviews based on the motivations related to the three cognitive dimensions, and go on to analyze projects by the content of parents' projects, parents gender, the child's gender, the child's age, and family type. Authors describe how the results of this study can lead to deeper understanding of significant and intrinsic projects of mothers and fathers having a child

with an ID to promote more favorable life experiences.

Special education teacher preparation programs are in a unique position to facilitate collaboration across disciplines (e.g., school psychology, general education, special education, occupational therapy) to promote the use of evidence-based strategies when working with students with autism spectrum disorder (ASD). In their article titled, "Applied Behavior Analysis in Today's Schools: An Imperative for Service Students with Autism Spectrum Disorder," Juliet Hart Barnet, Stanley Zucker, and Cori More provide recommendations for programs preparing special education teachers to promote the use of evidence-based practices which use applied behavior analysis (ABA) techniques. The manuscript outlines current barriers to using ABA techniques, justification for why ABA techniques should be used across service providers for students with ASD, and then provides suggestions for how special education teacher preparation programs can promote the use of ABA based strategies to improve educational outcomes for students with ASD.

Teachers are charged with using scientifically based teaching strategies to provide individualized instruction for students with disabilities. In the next article, Sacha Cartagena outlines how teachers can use High Leverage Practices (HLPs) identified by the Council for Exceptional Children and The Collaboration for Effective Education Development, Accountability, and Reform Center to address social-emotional learning of students with autism spectrum disorder or intellectual disability. In the article, "Using High-Leverage Practices to Support Social-Emotional Learning," Cartagena provides an overview of different types of scientifically based interventions, reviews specific educational practices to promote social-emotional learning, and

provides additional resources on HLPs and social-emotional learning.

In the next article, "Statewide Implementation and Scale-Up of Evidence Based Practices for Autism in Education: From Sea to Shining Sea," Patricia Schetter, Ann England, Maureen Kaniuka, Nancy Childress, Amanda Passmore, and Heidi Carico discuss the nationwide demand for and efforts to integrate evidence-based practices (EBPs) for autism into classrooms as well as the challenges that arise when implementation occurs. The authors describe how North Carolina and California have begun to address the need for EBP training and use within public education using implementation science frameworks. Further, they illustrate how in each location, implementation science has provided a framework for exploration, preparation/ planning, implementation and sustainment/scaling to take place. Finally, they share barriers encountered and lessons learned; implications for additional cross-state collaboration; and suggestions for future research.

Researchers have established that students with developmental disabilities, including intellectual disability (I/DD) can learn to read connected text using a teacher-led, phonics-based approach and also have demonstrated that students with I/DD may make slow, incremental progress when acquiring basic reading skills. Curriculum-based measures in reading (CBM-R), which are widely used with other student populations, may be sensitive to incremental growth in reading skills. In this article, "An Investigation of Computer Assisted Reading Instruction to Teach Phonics Skills to Young Students with Developmental Disabilities," Sara Snyder describes a study in which three elementary aged students with I/DD completed phonics lessons using a computer assisted reading instruction program. A CBM-R was used

weekly to assess students' progress in response to reading instruction. The researcher found that after 13 weeks of instruction, students' responses on CBM-R was highly variable with minimal changes in level. The author discusses study limitations, areas for further research, and recommendations for practitioners.

In the next article, "Parents Coaching in Naturalistic Interventions to Improve Communication Skills for Adolescents and Adults with Autism via Telepractice," Sanikan Wattanawongwan, Jennifer Ganz, Lauren Pierson, Valeria Yllades, Claudia Dunn, and Sarah Ura describe the implementation and results of a study focused on determining if with individual coaching and feedback via telepractice intervention, parents can increase behavioral skills and increase their children's communication skills. The researchers used a multiple probe design across participants design to examine the effects of their intervention among three parents of adolescents and adults with ASD. The results indicated a functional relation between the intervention and parent strategy implementation and improvement of children's targeted communication skills. The authors discuss the implication of the results and possibilities for future research.

Students with autism spectrum disorders (ASD) often engage in problematic behaviors which interfere with their learning. To reduce problem behaviors, behavior analysts use specific techniques to determine the function of the student's behavior, and identify replacement behaviors that allow maintenance of that function. In their article, "Using Contingency Space Analysis as Another Option for Assessing Challenging Behavior," authors Rachel Cagliani and Sara Snyder provide a detailed description and example of how to conduct a contingency space analysis (CSA) for a student with ASD.

The CSA is an alternative strategy to make hypotheses about the function of a student's behavior that provide useful data without the intensity of a formal functional behavior assessment. The authors propose the efficiency and effectiveness of a CSA in a classroom environment to address high-incidence problem behavior (e.g., off task).

The last article promotes Peer-Mediated Interventions (PMI) as a promising practice to improve social outcomes for students with autism spectrum disorder (ASD). In their review of the literature, Irem Bilgili-Karabacak, Amanda Weir, and Emma Gratton-Fisher used the Council for Exceptional Children's quality indicators to review PMI as a potential evidence-based practice. In their manuscript titled, "Peer-Mediated Interventions in Inclusive Settings for Adolescents with Autism: A Synthesis of the Literature," the authors reviewed eleven different single-case research designs with 33 participants with ASD, and found evidence that PMI is a potential evidence-based practice to improve social outcomes for secondary students with ASD.

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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Selecting and Using Children's Books with Authentic Representations of Characters with Developmental Disabilities

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Abstract: As parents and school professionals are typically responsible for choosing or making available books for children and youth, guidelines for choosing literature that is inclusive and diverse are warranted. Using the Rating Scale for Quality Characterizations of Individuals with Disabilities in Children's Literature to conduct content analyses, we evaluated one graphic novel, 16 picture books, and 30 chapter books (n=47) for their portrayals of characters with developmental disabilities. All books were eligible for the 2020 Dolly Gray Children's Literature Award. Results indicated that most characters portrayed have autism spectrum disorders (71%) and the majority are male (74%); most characters are portrayed positively and realistically, and in the chapter books the characters generally have dynamic development. Most engage in positive social relationships with friends and family, and all are included in integrated settings to some degree. To help school professionals select and use literature for children and youth, we provide several teacher-friendly materials.

The past decade has seen a proliferation of fictional characters with disabilities in print media such as biographies, novels, and other works for adults, as well as in children's and youth literature. Popular books that include characters with disabilities such as *Wonderstruck* (Selznick, 2011) and *The Curious Incident of the Dog in the Night-Time* (Haddon, 2004) have even been adapted to film and stage, respectively. Yet many books available on library bookshelves never get such widespread popularity, making the task of choosing appropriate media representations of individuals with disabilities even more complex for teachers, parents, and others who influence children.

Children and adolescents often interact in close proximity with peers with disabilities during their school years. While they are in school, they are also more likely than when they are adults to read books (Pew Research Center, 2014). A recent poll of American adults indicates that more than a quarter (27%) have not read even a part of a book within the past year, and adults with a high school diploma or less topped the charts with 44% not having read a book in whole or part. Furthermore, adults who identify as Hispanic, black, rural, poor, and male are less likely than others to have read a book in the past 12 months (Perrin, 2019). Thus, the formative years are critical in introducing children to others with disabilities - either in vivo or via proxy characters such as authentic representations found in children's literature.

This article describes a study that analyzed the characterization of individuals with developmental disabilities in books eligible for consideration for the 2020 Dolly Gray Children's Literature Award. First, we

discuss the social construction of disability and how disability is portrayed in children's literature. We then present the procedures of the study, its results, and a discussion of ways teachers and other service providers can select and use these books to increase understanding, inclusion, and respect for individuals with disabilities.

Social Construction of Disability

The social construction of disability is the concept that society, organizations, policymakers, and others in positions of power define what it means to have or not have a disability within the norms of a given society. Historically, disability has been recognized as a problem or a disadvantage that warrants treatment to decrease or eliminate its disabling symptoms in a group seen as a "figurative and literal 'freak show'" (Brown, 2019, p. 195), and in some cases, to eliminate those with disabilities such as through infanticide. As such, disability has been viewed as a health issue rather than a political or cultural issue. Its presence is often dichotomized—ability/disability, regular/ special education, normal/abnormal, same/different,—as if there is no valid space for existence between these poles, thus reinforcing systems of discrimination and exclusion (Aho & Alter, 2018; Annamma, et al., 2013). In contrast, the theoretical framework of Disability Studies rejects binary classifications. As Annamma and colleagues note, "dis/ability categories are not 'given' or 'real' *on their own*" but are "largely determined by relatively arbitrary distinctions between, for instance, what is considered poor eyesight and what constitutes blindness" (2013, p. 3).

Outmoded conceptions of disability persist within text media, including children's literature, where characters with disabilities have been "othered, stereotyped as extraordinary, served as sidekicks, played the

role of outsider, have lacked realism and accuracy and have rarely been allowed happy endings" (Aho & Alter, 2018, p. 304). Conversely, in an attempt to facilitate greater respect for individual differences, some authors omit 'both the verbal and visual text until the very end of the book, where a specific impairment is revealed," what Aho and Alter describe as "a narrative erasure of disability" (2018, p. 304). When important parts of an individual's lived reality (e.g., wheelchair, communication device, inaccessible spaces) are not present in children's literature, a message is communicated that "does not contribute to a challenging of ableist thinking about difference" (Aho & Alter, 2018, p. 309). At one extreme, the person with a disability is feared and excluded, and at the other extreme, the person is ignored or hidden. Either extreme points to the social discomfort our society has surrounding disability issues, and this discomfort is still present in children's literature.

For parents and school professionals, choosing appropriate books to facilitate greater understanding, inclusion, and respect for individuals with disabilities is a complex activity. Merely accessing a 'recommended' booklist or scanning through library or bookstore shelves will not guarantee that selected books include characterizations that are not only authentic but that they promote a healthy respect for the challenges individuals with disabilities face living in an ableist world (Pennell, et al., 2018), without stereotyping or otherwise excluding and oppressing them. As Black and Tsumoto note, "stereotypical representations can lead to erroneous perceptions" (2018, p. 46). Therefore, guidelines for selecting books that promote authentic characterizations of individuals with disabilities are important.

Authentic Representations of Disability in Children's Literature

Guiding criteria for evaluating children's literature have been available for decades, and the attention placed on critically analyzing books that highlight characters with disabilities has increased awareness of disability issues in the field of children's literature. Seminal guidelines developed by Blaska (1996) have been added upon by other researchers to "create frameworks or selection standards for building inclusive libraries … [and] characteristics of high-quality literature to promote classroom inclusion" (Kleekamp & Zapata, 2018, p. 591).

Most guidelines include similar themes related to the authenticity and multidimensionality of the characters with disabilities, their participation in inclusive environments, and the quality of their relationships with others. At the heart of most of these guidelines is the avoidance of stereotyping those with disabilities such as the "pitiful and pathetic," "object of violence," "sinister and/or evil," "Super Crip" and "laughable" (Biklen & Bogdan, 1977, p. 5-8).

Authenticity in representing characters with disabilities is likely to be found in first-person accounts, such as autobiographies or memoirs written by individuals with disabilities. Their lived experiences are genuine, even if they are not generalizable to broader populations. Stories told from the point of view of the character with disabilities are perceived as more genuine and relatable by readers with disabilities as well as by others. Unfortunately, in many children's books, other people such as friends and family members become the voice for individuals with disabilities (Kleekamp & Zapata, 2018).

Authentic representations of characters with disabilities, however, are not enough to warrant endorsement of certain books. The merit of the literature itself, and its illustrations, layout, and other artistic elements, are important in choosing appropriate books. Quality literature for children and youth includes elements such as the development of the characters and plot; the authenticity of the point of view; descriptions of settings; and the story's mood, tone, and pacing (Tunnell, et al., 2016).

The corpus of books that includes characters with disabilities is growing, making the task of finding the right books for the right purposes challenging. For example, when the Dolly Gray Children's Literature Award was initiated in 2000, only 12 children and adolescent books portraying individuals with developmental disabilities (DD) were identified, while 47 were identified for the most recent award. The responsibility to make conscious decisions about which books to use often belongs to classroom teachers. They "must educate themselves on the issue by reading the research and hunting for quality literature rich in diversity" (Leahy & Foley, 2018, p. 172). To facilitate this process, the current study examines the depictions of characters with developmental disabilities in all books considered for the 2020 Dolly Gray Award. The following research questions guided this study:

1. How are the characters with developmental disabilities portrayed in books eligible for the 2020 Dolly Gray Award?
2. Are the social interactions involving the characters with disabilities and others primarily positive or negative?
3. Are the relationships between the characters with disabilities and their siblings primarily positive or negative?

4. What exemplary practices are portrayed in this selection of books?

Method

Book Selection

Books eligible for the 2020 Dolly Gray Children's Literature Award had to meet the following criteria: (a) include a human character (main or supporting) with a DD; (b) be written in a story format for an intended audience of children or adolescents (c) be copyrighted/published between late 2017 and 2019, or reprinted and not previously considered for the award, (d) be published in and/or translated into English, and (e) be published by a commercial publisher.

The first step in this process was to search online sources such as Amazon, Barnes and Noble, Goodreads, and Children's Books in Print, using terms such as *autism, Down syndrome, developmental disability, multiple disability, fetal alcohol syndrome,* and *Asperger.* Also, many publishers submitted recently-published books to be considered for the award.

All potential books were screened using the eligibility criteria. For this study, we used the definition of DD found in the Developmental Disabilities Assistance and Bill of Rights Act (2000) by considering characters who have a chronic, lifelong condition attributable to mental impairments or a combination of mental and physical impairments, but we excluded characters who had physical disabilities alone. The impairment(s) must be present before an individual is 22 years old and must limit the individual in three or more of seven major life functions thus requiring lifelong or extended coordinated support. Our analysis included characters with autism spectrum disorder (ASD) but did not include those affected solely by emotional/behavioral disabilities (e.g., anxiety, obsessive-compulsive disorder).

We classified main characters as those who are critical to the plot, often as protagonists, and supporting characters as those who are important to the growth of the main characters or to the development of the plot.

Instrumentation

The *Rating Scale for Quality Characterizations of Individuals with Disabilities in Children's Literature* (aka *Quality Characterizations Scale*; www.dollygrayaward.com/information-and-procedures/rating-scale; Dyches et al., 2018) was used to gather data to determine the winners of the Dolly Gray Award. Earlier versions of the *Quality Characterizations Scale* have been used in previous studies (e.g., Dyches & Prater, 2000; Dyches & Prater, 2005; Dyches et al., 2001; Dyches et al., 2009). Although this scale was developed to analyze the characterization of individuals with DD, the items are pertinent to characters with other disabilities.

The *Quality Characterizations Scale* includes four subscales that apply to this evaluation: (a) Personal Portrayal, (b) Social Interactions, (c) Sibling Relationships, and (d) Exemplary Practices. These items are rated on a Likert-type scale (1 = *strongly disagree*, 5 = *strongly agree)*, and mean scores are derived for each subscale.

The Personal Portrayal subscale includes descriptive items related to (a) main or supporting level, and (b) personal characteristics such as name, age, gender, and race of the character with a disability; type of disability; school environment; and residence. Six Likert-type items are related to the character being portrayed accurately and realistically, being fully developed, and displaying strengths and similarities with others. Also, we evaluated whether the author uses nondiscriminatory language that avoids stereotypic portrayals and uses person-first

descriptions (Blaska, 2003; Turnbull, et al., 2016).

The Social Interactions subscale includes several descriptive items regarding social relationships and their associated roles (e.g., victim/perpetrator/protector; dependent/caregiver). Five items rated on a Likert-type scale are related to reciprocal relationships, acceptance, promoting empathy rather than pity, positive social contributions, and respect for the character with disabilities (Blaska, 2003; Turnbull, et al., 2016).

The Sibling Relationships subscale includes five items related to the relationships the character with disabilities develops with siblings: siblings experience a wide range of emotions, have unique growth opportunities, enjoy reciprocity in the relationship, are not given unusually burdensome duties, and appear aware of the nature and effects of the disability (Meyer & Holl, 2014; Meyer & Vadasy, 2008).

The Exemplary Practices subscale includes five items related to the character with disabilities having full citizenship opportunities in integrated settings, receiving appropriate services, engaging in valued occupations, and being self-determined (Turnbull, et al., 2016). Also, the attitudes and practices portrayed are congruent with those in the era depicted in the book.

Procedures

The current panelists for the Dolly Gray Award served as evaluators of the books in this study. Over a two-year period, they used the *Quality Characterizations Scale* to determine the characterizations of individuals with DD and submitted their evaluations using Qualtrics survey software. The panel included special education and children's literature university professors; individuals with developmental and other disabilities; parents and teachers of individuals with DD; children's literature authors and illustrators; and university students. Upon completion of all the evaluations, the researchers exported the data into an Excel spreadsheet for data analysis.

Data Analysis

Descriptive data (e.g., age, disability, gender, race) were analyzed by reviewing each of the evaluators' responses on the *Quality Characterizations Scale*. If all evaluators agreed, then the description was considered accurate. Each discrepancy was settled by further review of the book, and if necessary, by reviewing information on author websites or other credible sources, and coming to an agreement between researchers.

Data rated along a Likert-type scale were analyzed to determine the tone of the overall depictions of characters with disabilities and practices affecting them. Thus, a fixed cut-off score was determined, with the rationale that scores with a negative valence (lower than 2.5 on a 1-5-point scale) should not be considered as neutral. Ratings from each reviewer for each book were summed and an average for each subscale was calculated to determine a negative (1-2.49), neutral (2.5-3.5), and positive score (3.51-5). Positive and neutral ratings were considered acceptable.

Results

Description of Books Reviewed

Of all books screened for potential eligibility of the award, 47 were eligible for review, including one graphic novel (*Tsu and the Outliers*, 2%), 16 picture books (34%), and 30 (64%) chapter books. Of these 47 books, 45 have one main or supporting character with DD, and two books include two main characters with disabilities (Jesse and Springer in *Me and Sam-Sam Handle the Apocalypse*; Ethan and Ivy in *Things I Should*

Have Known). Five books include a main/supporting character with DD along with at least one minor character with DD who was not evaluated because their presence in the plot is not substantial (*The Forgotten Shrine, The Heroes Return, Monroe and the Coyote, Things I Should Have Known, A Time to Run*). A few books also include characters with other disabilities such as blindness (*The Ostrich and Other Lost Things*) and depression (*The Fall of Innocence*). Of the 47 books, seven (15%) are loosely based on real individuals (e.g., *Hannah's Down Syndrome Superpowers*, *Addison the Light Catcher*) and four books (9%) are simplistic biographies or autobiographies (e.g., *How to Build a Hug*;

Funny, You Don't Look Autistic). The remaining 36 (77%) books are fictional.

Eleven (23%) of the stories are told by a narrator, and 36 are written in first person (77%). Of the 36 first-person stories, 12 (33%) are told from the perspective of the individual with DD, two (6%) with dual perspectives, including the perspective of a character with DD (*Forever Neverland, A Time to Run*), and the remaining 22 (61%) are told from the perspective of a typically developing character. A list of the books including the title, author, illustrator (if applicable), year published, and appropriate reading/interest levels are displayed in Table 1.

Table 1

Books with Main or Supporting Characters with Developmental Disabilities

Title, Author (Illustrator), Year, Reading/Interest Grade Levels
Autism Spectrum Disorders (n=33)
The Amazingly Awesome Amani, Jamiyl Samuels (Tracy-Ann Samuels), 2018, 3-4
Ball! Ball! Ball!, Kelley Donner, 2019, P-2
Bat and the Waiting Game, Elana K. Arnold, 2018, 1-5
Benji, the Bad Day, and Me, Sally J. Pla, 2018, K-3
Camped Out, Daphne Greer, 2017, 5-9
Caterpillar Summer, Gillian McDunn, 2019, 4-7
Fade to Us, Julia Day, 2018, 7-12
A Friend for Henry, Jenn Bailey (Mika Song), 2019, K-3
Forever Neverland, Susan Adrian, 2019, 3-7
The Forgotten Shrine, Monica Tesler, 2018, 5-9
Funny, You Don't Look Autistic: A Comedian's Guide to Life on the Spectrum, Michael McCreary, 2019, 7-12
A Girl and Her Dogs, Carol Norris & Kelsey Anastasia Norris, 2018, 3-6
The Heroes Return, Monica Tesler, 2016, 5-9
How to Babysit a Logan, Callie Metler-Smith (Cindy Vattahil), 2019, K-3
How to Build a Hug: Temple Grandin and Her Amazing Squeeze Machine, Amy Guglielmo & Jaqueline Tourville (Giselle Potter), 2018, P-3
Kids Like Us, Hilary Reyl, 2018, 7-12
Lou Knows What to Do: Special Diet, Kimberly Tice & Venita Litvack (Andre Kerry), 2019, K-2
Me and Mister P, Maria Farrer (Daniel Rieley), 2018, 3-7
Me and Sam-Sam Handle the Apocalypse, Susan Vaught, 2019, 3-8
Most Valuable Players: A Rip & Red Book, Phil Bildner, 2019, 3-4
Nathan's Autism Spectrum Superpowers, Lori Leigh Yarborough (Natalie Merheb), 2018, K-4
Nope. Never. Not For Me!, Samantha Cotterill, 2019, Pre-K-2
The Ostrich and Other Lost Things, Beth Hautala, 2018, 5-6
Penguin Days, Sara Leach (Rebecca Bender), 2019, 2-5
Rebecca and Heart, Deanna K. Klingel, 2018, 5-8
Scarlet Ibis, Gill Lewis, 2018, 4-9

Secrets From the Deep, Linda Fairstein, 2018, 3-7
Talking to the Moon, Jan L. Coates, 2018, 5-9
Team Players, Mike Lupica, 2019, 3-7
Things I Should Have Known, Claire LaZebnik, 2018, 7-10
This Beach is Loud, Samantha Cotterill, 2019, P-2
Tournament of Champions, Phil Bildner (Tim Probert), 2018, 3-4
Uniquely Wired: A Story About Autism and Its Gifts, Julia Cook (Anita DuFalla), 2018, K-4

Down Syndrome (n=5)
Addison the Light Catcher, Courtney Kotloski (Natalie Sorrentino), 2018, K-2
Hannah's Down Syndrome Superpowers, Lori Leigh Yarborough (Roksana Oslizlo), 2019, K-4
Mallko and Dad, Gusti, 2018, 4-6
Marcus Vega Doesn't Speak Spanish, Pablo Cartaya, 2019, 5-6
Munro vs. the Coyote, Darren Groth, 2017, 9-12

Intellectual Disability & Developmental Disability (n=7)
The Bridge Home, Padma Venkatraman, 2019, 5-6
The Fall of Innocence, Jenny Torres Sanchez, 2018, High School/Young Adult
Forests of Farallon, Ben McKinnon Condie, 2017, High School
My Special Brother Bo, Britt Collins (Brittany Bone-Roth), 2019, 4-6
Trampoline Boy, Nan Forler (Marion Arbona), 2018, P-2
Tsu and the Outliers, E Eero Johnson, 2018, 6-9
The Weight of a Thousand Feathers, Brian Conaghan, 2019, High School/Young Adult

Developmental Delay (n=1)
Someday We Will Fly, Rachel DeWoskin, 2019, 7-9

Fetal Alcohol Syndrome Disorder (n=1)
A Time to Run: Stuart and Sam, Lorna Schultz Nicholson, 2018, 6-10

Authentic Representations of Characters with Developmental Disabilities

We analyzed representations of the 49 individuals with DD across four themes: (a) personal portrayal, (b) social interactions, (c) sibling relationships, and (d) exemplary practices. Data related to the graphic novel are included in the analyses of picture books. An overall mean was calculated for each subscale, and percentages of positive, neutral, and negative depictions were also calculated. The mean score for each subscale for the group of 47 books was in the positive range; no mean scores were neutral or negative. When each book was analyzed individually, no books were rated as negative in any of the subscales, although some were rated as neutral.

Personal Portrayal

The overall mean score for the portrayals of the 49 characters with DD was 3.92 (positive). Positive portrayal was found among 39 of the characters with DD (80%), while neutral portrayals were found in 10 of the characters (20%). Neutral portrayals of the characters with DD in picture books were higher (*n*=8; 44%). This is likely due to the nature of picture books in which the author has less space to show the multidimensional development of the character. No books include a character who is portrayed negatively. We provide summaries of these characteristics in Tables 2 and 3 and provide data below for some of the items from this subscale.

Table 2

Characterizations in Picture Books and Graphic Novel

Book	Character	Personal Characteristics	Level	Point of View	Personal Portrayal*	Social Interactions	Sibling Relationships	Exemplary Practices
Addison the Light Catcher	Unnamed baby	Infant White male DS	Supporting	Person without disability	Slightly Realistic Neutral Slightly Dynamic	Positive	Positive	Neutral
The Amazingly Awesome Amani	Amani	Elementary Black male ASD	Main	Narrator	Slightly Realistic Neutral Slightly Dynamic	Neutral	Neutral	Neutral
Ball! Ball! Ball!	Tom	Young child White male ASD	Main	Narrator	Realistic Neutral Slightly Dynamic	Neutral	NA	Neutral
Benji, the Bad Day and Me	Benji	Young child White male ASD	Supporting	Person without disability	Realistic Positive Dynamic	Positive	Positive	Positive
A Friend for Henry	Henry	Elementary Asian male ASD	Main	Narrator	Realistic Positive Dynamic	Positive	NA	Positive
Hannah's Down Syndrome Superpowers	Hannah	Elementary White female DS	Main	Person with disability	Realistic Positive Dynamic	Positive	NA	Positive
How to Babysit a Logan	Logan	Middle School White male ASD	Main	Animal without disability	Realistic Positive Slightly Dynamic	Positive	NA	Neutral
How to Build a Hug	Temple Grandin	Lifespan White female ASD	Main	Narrator	Realistic Positive Dynamic	Positive	Neutral	Positive

Lou Knows What to Do	Lou	Elementary White male ASD	Main	Narrator	Realistic Neutral Slightly Dynamic	Neutral	NA	Positive
Mallko and Dad	Mallko	Birth to childhood White male DS	Main	Person without disability	Realistic Positive Dynamic	Positive	Positive	Positive
My Special Brother Bo	Bo	Preschool White male DD	Supporting	Person without disability	Realistic Positive Dynamic	Neutral	Neutral	Positive
Nathan's Autism Spectrum Superpowers	Nathan	Elementary White male ASD	Main	Person with disability	Realistic Positive Dynamic	Positive	NA	Positive
Nope. Never. Not for Me!	Unnamed boy	Elementary White male ASD	Main	Person with disability	Realistic Neutral Slightly Dynamic	Neutral	Neutral	Neutral
This Beach is Loud	Unnamed boy	Child Asian male, ASD	Main	Person with disability	Realistic Positive Dynamic	Positive	NA	Positive
Trampoline Boy	Unnamed boy	Child White male DD	Main	Narrator	Slightly Realistic Neutral Static	Neutral	NA	Neutral
Tsu and the Outliers	Tsu	Middle School Asian male DD	Main	Narrator	Slightly Realistic Neutral Slightly Dynamic	Neutral	NA	Neutral
Uniquely Wired	Zak	Elementary White male ASD	Main	Person with disability	Realistic Positive Dynamic	Positive	Positive	Positive

Note. ASD = autism spectrum disorder; DD = developmental disability; DS = Down syndrome; ID = intellectual disability.

*Personal Portrayal includes realistic depiction, positive portrayal, and character development.

Table 3

Characterizations in Chapter Books

Book	Character	Personal Characteristics	Level	Point of View	Personal Portrayal*	Social Interactions	Sibling Relationships	Exemplary Practices
Bat and the Waiting Game	Bat	Elementary White male ASD	Main	Narrator	Realistic Positive Dynamic	Positive	Positive	Positive
The Bridge Home	Rukku	Middle School Asian female ID	Supporting	Person without disability	Realistic Positive Dynamic	Positive	Positive	Positive
Camped Out	Duncan	Middle School White male ASD	Supporting	Person without disability	Realistic Positive Dynamic	Positive	Positive	Positive
Caterpillar Summer	Chicken	Elementary Black male ASD	Supporting	Narrator	Realistic Positive Dynamic	Positive	Positive	Positive
Fade to Us	Natalie	High School Asian female ASD	Supporting	Person without disability	Realistic Positive Dynamic	Positive	Positive	Positive
The Fall of Innocence	Jeremy	Young Adult White male DD	Supporting	Narrator	Realistic Neutral Slightly Dynamic	Negative	NA	Neutral
Forests of Farallon	Daniel	18-year old White male DD	Supporting	Person without disability	Realistic Neutral Slightly Dynamic	Neutral	Positive	Neutral
Forever Neverland	Fergus	11-year old White male ASD	Main	Person without disability & Person with disability	Realistic Positive Dynamic	Positive	Positive	Positive
The Forgotten Shrine	Jasper	Middle School White male ASD	Main	Person with disability	Slightly Realistic Positive Dynamic	Positive	Positive	Positive
Funny, You Don't Look Autistic	Michael	Lifespan White male ASD	Main	Person with disability	Realistic Positive Slightly Dynamic	Positive	Positive	Positive

A Girl and Her Dogs	Kelsey	Infancy through Childhood White female ASD	Main	Person without disability	Realistic Positive Dynamic	Neutral	NA	Positive
The Heroes Return	Jasper	Middle School White male ASD	Main	Person with disability	Realistic Positive Dynamic	Positive	Neutral	Positive
Kids Like Us	Martin	16-year old White male ASD	Main	Person with disability	Realistic Positive Dynamic	Positive	Positive	Positive
Marcus Vega Doesn't Speak Spanish	Charlie	Sixth Grade Latinx male DS	Supporting	Person without disability	Realistic Positive Dynamic	Positive	Positive	Positive
Me and Mister P	Liam	Elementary White male ASD	Supporting	Person without disability	Realistic Positive Dynamic	Positive	Positive	Positive
Me and Sam-Sam Handle the Apocalypse	Jesse	Middle School White female ASD	Main	Person with disability	Realistic Positive Dynamic	Positive	NA	Positive
	Springer	Middle School White male ASD	Main	Person with disability	Realistic Positive Dynamic	Positive	NA	Positive
Most Valuable Players	Red	Upper Elementary White Male ASD	Supporting	Person without disability	Realistic Positive Dynamic	Positive	NA	Positive
Munro vs. The Coyote	Evie	Deceased White female DS	Supporting	Person without disability	Realistic Positive Dynamic	Positive	Positive	Positive
The Ostrich and Other Lost Things	Jacob	Middle School White Male ASD	Supporting	Person without disability	Realistic Positive Dynamic	Positive	Positive	Positive
Penguin Days	Lauren	Elementary White female ASD	Main	Person with disability	Realistic Positive Dynamic	Positive	Neutral	Positive
Rebecca and Heart	Rebecca	Childhood to Teenager White female ASD	Main	Animal without disability	Realistic Positive Dynamic	Positive	Positive	Neutral

Title	Character	Age/Race/Disability	Role	Perspective	Personal Portrayal*			
Scarlet Ibis	Red	Elementary White male ASD	Supporting	Person without disability	Realistic Positive Dynamic	Positive	Positive	Neutral
Secrets From the Deep	Zee	8-year old Black male ASD	Supporting	Person without disability	Realistic Positive Dynamic	Positive	NA	Neutral
Someday We Will Fly	Naomi	Infant to young child White female DD	Supporting	Person without disability	Realistic Positive Dynamic	Positive	Positive	Neutral
Talking to the Moon	Katie	11-year old White female ASD	Main	Person with disability	Realistic Positive Dynamic	Positive	NA	Positive
Team Players	Cassie	Middle School White female ASD	Supporting	Narrator	Realistic Positive Dynamic	Positive	NA	Positive
Things I Should Have Known	Ethan	Young Adult White male ASD	Supporting	Person without disability	Realistic Positive Dynamic	Positive	Positive	Positive
	Ivy	Young Adult White female ASD	Supporting	Person without disability	Realistic Positive Dynamic	Positive	Positive	Positive
A Time to Run: Stuart and Sam	Stuart	High School White male FASD	Main	Person without disability/ Person with disability	Realistic Positive Dynamic	Positive	Positive	Positive
Tournament of Champions	Red	Upper Elementary White male ASD	Supporting	Person without disability	Realistic Positive Dynamic	Positive	NA	Positive
The Weight of a Thousand Feathers	Dan	14-year old White male ID	Supporting	Person without disability	Realistic Positive Slightly Dynamic	Positive	Positive	Neutral

Note. ASD = autism spectrum disorder; DD = developmental disability; DS = Down syndrome; FASD = Fetal Alcohol Syndrome Disorder: ID = intellectual disability.

*Personal Portrayal includes realistic depiction, positive portrayal, and character development.

Main or Supporting Level. Of the 49 characters with DD, 28 (57%) were determined to be the main character, with 21 (43%) as supporting characters.

Personal Characteristics. Most characters with DD are male (*n*=36; 74%). Nine (18%) were determined by the reviewers to be persons of color (e.g., Black, Latinx, Asian). Ages range from child to adult. In two books the characters with DD are depicted in their youth as well as in adulthood *(Funny You Don't Look Autistic, How to Build a Hug*). In two books, the character with DD dies or has already passed away when the story takes place (*Munro vs. the Coyote, The Bridge Home)*, but because of the importance of the character's presence to the plot, these books were still eligible for consideration.

Of the 49 characters with developmental disabilities, a vast majority (*n*=35; 71%) are individuals with ASD, and almost all of them could be considered to be relatively high functioning. Only *Forests of Farallon* contains a character with ASD who is non-verbal and has a wide range of behavioral challenges. The other characters with DD include individuals with unspecified intellectual disabilities (*n*=7, 14%), Down syndrome (*n*=5, 10%), developmental delay (*n*=1, 2%), and fetal alcohol syndrome disorder (*n*=1, 2%). Some authors chose not to label the character's disability, such as in *Someday We Will Fly*, but evidence of the disability appears elsewhere such as the author describing the characteristics of the disability or in an author's note.

Realistic Depiction. Most of the characters evaluated were found to be depicted realistically (*n*=43, 88%). Other characters were rated only "slightly realistic" (*n*=6, 12%), and no characters were considered to be portrayed as unrealistic.

Many of the books highlight the strengths of the character with DD. For example, in *Me and Sam-Sam Handle the Apocalypse,* both Jesse and Springer make positive social contributions by solving the mystery of who stole the library fund money, and by helping the community clean up after a devastating tornado hit the town. Some individuals with DD display self-determination, such as Stuart in *A Time to Run,* who works hard throughout the track season despite several difficulties, and his determination leads to him placing in the school track meet.

Character Development. Of the 49 characters with DD, 37 (76%) were considered dynamic, 11 (22%) were slightly dynamic, or only developed in minor ways throughout the story, and one (2%) was static (i.e., *Trampoline Boy*). Of characters described as either slightly dynamic or static, eight (73%) were characters in picture books. With shorter stories, it is more difficult to show development in a character; however, some authors still managed to create a dynamic character in their picture book. For example, in the picture book *Benji, the Bad Day and Me*, Benji begins his day by playing in his box. When he notices his brother Sammy is having a bad day, he leaves the comfort of his box and helps cheer Sammy up. This demonstrates growth and initiative for Benji, a young boy with ASD.

Social Interactions
The overall mean score for all the social interactions of the 49 characters with DD was 3.93 (positive). The majority of the books portray positive social relationships (*n*=39, 80%), nine were neutral (18%), and one was rated negative (2%; *The Fall of Innocence*).

A character's primary relationship throughout the story plays a vital role in the plot. The most common primary relationship is between the character with DD and a

sibling (*n*=15, 31%). Characters also have a primary relationship with a parent (*n*=12, 25%), a friend without a disability (*n*=10, 20%), a mix of many relationships (*n*=7, 14%), other (*n*=3, 6%), and a friend with a disability (*n*=2, 4%). One example of a positive relationship is in *Forever Neverland.* Fergus, who has ASD, and his sister, Clover, visit Neverland with Peter Pan. In this new world, Fergus and Clover learn more about each other and work as a team as they face new problems and adventures that ultimately strengthen their relationship.

Sibling Relationships
Of the 49 characters evaluated, 31 (63%) had at least one sibling depicted in the story. The overall mean score for the sibling relationships of the 31 characters was 3.72 (positive). A majority (*n*=25, 81%) of the sibling relationships portrayed were rated positively. Only a few (*n*=6, 19%) of the relationships were rated neutral. An example of a positive sibling relationship is found in *Caterpillar Summer*, wherein Cat takes loving care of her younger brother, Chicken, who has ASD. At the beginning of the story, Cat feels an abnormal burden to care for her brother; however, she eventually realizes that she is placing that burden upon herself. Once she learns to trust others and to allow Chicken to trust others, she can have childhood experiences similar to her peers.

Exemplary Practices
The overall mean score for exemplary practices was 3.95. Exemplary practices were found in the books for 35 characters (71%); 14 were neutral (29%), and no overall negative practices were observed.

Schooling and Education. About one-half of the stories depicted schooling (24 characters, 49%). Of the books that depict a character's schooling, 10 characters are educated in general education classrooms

(21%); seven in special classrooms (14%); five in a mix of special classes, general education, or boarding school (10%); and two at home (4%). One example of a mix of classes is Temple Grandin in *How to Build a Hug*. Temple begins her schooling in general education classrooms. When she doesn't seem to be thriving there, she begins attending a boarding school, where she flourishes. The two books in which the characters receive homeschooling were set during WWI and WWII (*Rebecca and Heart, Someday We Will Fly,* respectively). They were schooled at home due to common practices of the time and the external forces of war taking place outside the home.

Residence. Raters determined 41 characters had the family home as a primary residence, and four characters' residences were not depicted. For the other four characters, their residence was mixed: some spent some time in a foster home, orphanage, institution, jail, or they were temporarily homeless. For example, in *The Fall of Innocence*, Jeremy, a young adult with DD, was wrongly prosecuted and sent to jail for several years. After he was released, he was able to live in a family home.

Discussion
Books Published
For this study, we evaluated the depictions of 49 characters with developmental disabilities in 47 books considered for the 2020 Dolly Gray Children's Literature Award. The 47 books were published over a two-year period which averages 23.5 books considered each year. This average is higher than the average number of books eligible for the Dolly Gray Award in each previous study, indicating a steady and substantial increase since its inception in 2000 when an average of only six books per year were considered for the award (Dyches & Prater, 2000; Dyches & Prater,

2005; Dyches et al., 2001; Dyches et al., 2009; Dyches et al., 2018).

Nearly one-third of the stories are told from the point of view of the character with DD, either from a sole or dual perspective with a typically developing character. When characters with disabilities "do not speak for themselves, but are spoken for and about," they are placed in inferior positions (Aho & Alter, 2018, p. 308). Conversely, when stories are told from the point of view of characters with disabilities, young readers may be likely to have greater awareness and empathy toward their peers with disabilities (Black & Tsumoto, 2018). Overall, this set of books was considered to have positive and authentic portrayals of individuals with developmental disabilities.

Personal Portrayal

The mean rating for personal portrayal of the characters with DD was positive, and 80% of the books were positive for characterization. Approximately three-fourths of all characters in these books and three-fourths of the characters with ASD are male. This is not surprising given the 4:1 ratio of males to females with autism in the general population (Centers for Disease Control and Prevention, 2018). Interestingly, only one picture book includes a female character with ASD: *How to Build a Hug*, a story about Temple Grandin's sensory sensitivities and how she discovers ways to soothe herself. More humanizing texts, particularly picture books, that portray females with DD are warranted so young readers, including readers with disabilities, can find appropriate role models within the stories of the books they read. Unaware of this absence, typically developing readers continue to live in environments in which their peers with disabilities remain largely unfamiliar to them, or perhaps, are invisible (Kleekamp & Zapata, 2018; Rieger & McGrail, 2015).

A majority of the characters in these books have ASD; the remaining have Down syndrome, other intellectual disabilities with unspecified etiology, developmental delay, and fetal alcohol syndrome disorder. Similar to a content analysis study conducted by Black and Tsumoto (2018), the characters with ASD in the current study appear to be high functioning, which for readers, normalizes the experience of living with autism, and delegitimizes the experience of those who are significantly impacted by their various autistic characteristics. This overrepresentation further stereotypes people with ASD as savants or simply 'quirky.'

The proportion of children with ASD compared to other types of developmental disabilities in these books does not represent the proportion enrolled in U.S. schools. According to the most recent school data, of the children ages 3-21 who have been classified as having a disability, 14% have autism compared to 7% who have developmental delays, and 6% who have intellectual disabilities (McFarland et al., 2019), whereas, in this selection of books, 71% of the characters have ASD.

Although many authors do not explicitly identify the race/ethnicity of the characters within these stories, reviewers were relatively consistent in using pictorial and cultural cues to assign racial categories to characters with DD. In this study only 18% of the characters with DD are from diverse ethnic backgrounds, underrepresenting people of color compared to the 2019 U.S. Census population estimates, where more than 40% of the population are people of color.

Almost all the characters are depicted as being realistic. This indicates the books generally avoid superhuman or subhuman depictions and avoid miraculous cures of the

disabling conditions. Brenna (2013) notes that when authors cure or kill the characters with disabilities, they are not envisioning a positive future for them.

Most of the characters are considered to be dynamic, displaying multidimensionality, credibility, and growth throughout the stories. This is encouraging and is contrary to Michals and McTiernan's (2018) argument that people with disabilities are often depicted in children's literature as "eternal children" with the impossibility of growth, remaining childlike because of their disability.

Social Interactions
The mean rating for social interactions of the characters with DD and others was positive, and most of the books were rated as positive for social interactions. The characters with DD in this sample of books engage in positive reciprocal relationships. The most common primary relationship depicted is with a sibling. This is not surprising, as the sibling relationship is the longest-lasting relationship a person with disabilities is likely to have. Other common relationships are with parents and with typically developing peers. Very few books depict relationships with peers with disabilities, reflecting society's emphasis on having citizenship rights with typically developing children in inclusive environments.

Sibling Relationships
The mean rating for sibling relationships was positive, and most of the books were rated as positive in this area. Many characterizations show a wide range of experiences and emotions common among siblings of children with disabilities. They show frustration, guilt, and fear of the future, as well as pride, joy, love, and respect. Many of their experiences facilitate their growth in maturity, insight, and loyalty. These

emotions are consistent with the literature regarding siblings' experiences (Meyer & Holl, 2014; Meyer & Vadasy, 2008).

Exemplary Practices
The mean rating for exemplary practices related to the characters with DD was positive, and most of the books were rated as positive for exemplary practices. When school environments are depicted, more than half of the time they are in general education settings, which unfortunately does not reflect current practice. For example, in 2017, only 17% of students with intellectual disabilities spent at least 80% of their day in general education settings (McFarland et al., 2019). The high percentage of students with DD being educated alongside their typically developing peers in these books may reflect trends related to more able students with autism. This sample of books had a large proportion of characters with what could be considered higher functioning autism.

Of the 45 characters whose residences were depicted, all lived in a family home at some time, and only four (9%) also lived in another residence, such as an orphanage or foster home. Given some of the books are historical fiction (e.g., *Rebecca and Heart*), living in an orphanage is not considered unusual.

Limitations and Future Research
Several limitations exist related to this content analysis study. It is possible that not all eligible books were included in the analysis. Not all reviewers evaluated each book, leading to fewer rated items in some instances, and thus, differences in the confidence bands surrounding the means for the subscales of each book. Also, some results are subjective (e.g., race/ethnicity) and may not accurately reflect the authors' or the illustrators' intent. Additionally, not all reviewers have expertise in identifying characteristics of various developmental

disabilities. Future research could include a more thorough analysis of established symptoms related to the characters with disabilities such as Down syndrome, to better analyze realistic and authentic portrayals, as has been done in research related to characters with ASD (Kelley, et al., 2015; Kelley, et al., 2018).

Implications for Practitioners
From the 47 books analyzed in the current study, one book was chosen as the winner of the 2020 Dolly Gray Children's Literature Award, *Scarlet Ibis* by Gill Lewis. This book authentically portrays a child with an autism spectrum disorder in an engaging story appropriate for middle-grade children. The protagonist, 12-year old Scarlet, and her younger brother, Red, get separated due to a house fire, and both are determined to be reunited. Red's autistic characteristics are portrayed as strengths, while his challenges are not ignored. This book is a good example of what Aho and Alter suggest for literature that includes characters with disabilities: "it neither erases disability nor portrays it as something to be pitied or overcome" (2018, p. 316). For the author's summary of this award-winning book, click this link: Scarlet Ibis Reading Notes.

Parents, teachers, librarians, and other school professionals can use the information in Table 1 to locate these recently published books. Data from Tables 2 and 3 can be used to select books appropriate to individual or class situations, as they contain information about the character with DD as well as the quality of the depictions. Furthermore, annotations help readers learn about the plot of each story. Gathered in one place, these annotations can be easily accessed by clicking here: Dolly Gray Award Book Summaries. Figure 1 provides examples of discussion questions for use with a few of the books considered in this study.

School professionals and others who want more guidance regarding how to select quality literature that includes characters with disabilities can use the Rating Scale for Quality Characterizations of Individuals with Disabilities in Children's Literature for these or other books. A simplified 1-page checklist based upon this scale is found in Figure 2.

Conclusion
Teachers, librarians, and other school professionals engage in critically important moral acts when they choose books for their classroom and school libraries. Every book has the potential to instill values which it either implicitly or explicitly communicates to its readers. Are characters with disabilities to be pitied or respected? Included or excluded? Are they usually male or female? White or a person of color? Can they hold respectable jobs or are they dependent upon others? These and other questions are about values, values that are taught beginning with the first book a child reads.

The data from this study indicate if teachers were to randomly choose one of these books for use in their classrooms, they would likely encounter an authentic portrayal of a character with developmental disabilities who engages in positive and reciprocal relationships with their siblings and with typically developing peers, and who exists in a time and place where they are living in their family home, receiving appropriate services, and is educated in general education settings alongside typically developing classmates. A chosen book is also more likely to have the character with DD be a white school-aged male who has ASD, who is an authentic main character who develops multidimensionally, appears to be realistic and relatable, but whose story is told from a point of view that is not his own.

Figure 1

Discussion Questions for Select Books

Book	Discussion Questions
Addison the Light Catcher	● How can you share your light the way Addison's little brother does?
The Amazingly Awesome Amani	● What makes Amani so awesome? ● Have you ever pretended to be a superhero like Amani?
Benji, the Bad Day, and Me	● When was a time you were like Benji and cheered someone up on a bad day? ● What did Benji do to cheer up Sammy?
The Bridge Home	● What did Rukku contribute to her "family" that made her so special? ● Why did Viji and Rukku make the difficult decision to leave their family? Do you think they made the right choice?
Caterpillar Summer	● It was usually hard for Chicken to make friends quickly with others, but why do you think it was so easy for him to connect with his grandma?
Fade to Us	● What do you think Brooke learned by spending the summer with Natalie? ● How did Natalie grow by being part of the play?
Forever Neverland	● How do you think Fergus feels when everyone in Neverland accepts him for who he is? ● When in the story do you think Fergus grew the most?
Hannah's Down Syndrome Super Powers	● What are some superpowers your friend shares with Hannah? ● If you could have one of Hannah's superpowers, which one would it be?
How to Babysit a Logan	● What does Thunderbolt love most about Logan?
How to Build a Hug	● How did Temple feel when things were too noisy, smelly, bright, and confusing? ● Why did Temple build the hug machine?
Mallko & Dad	● How did Mallko's dad learn to love Mallko? ● What do you think it would be like to have a sibling with Down Syndrome?
Marcus Vega Doesn't Speak Spanish	● How do you think it made Charley feel to know his brother always stood up for him? Do you have someone that stands up for you? ● What can you do to help end bullying in school?
The Ostrich and Other Lost Things	● Why was it hard for Olivia to share the play with Jacob? Do you think she was glad she did in the end? Why/why not?
Penguin Days	● How can we include people with autism the way Lauren was included? ● Why did Lauren "flip her lid"? Have you ever felt like that before?
Scarlet Ibis	● Do you think it was wrong that Red was sent to a different home than Scarlet? Why? ● How do you think it made Scarlet and Red feel to be separated?
A Time to Run	● Why do you think Gill Lewis used the title of "Scarlet Ibis" for this book? ● Why do you think Stuart runs away sometimes?

Figure 2

Checklist for Choosing Children's Books That Include Characters with Disabilities

Personal Portrayal ❑ Accurate ❑ Realistic ❑ Fully developed ❑ Disabilities *and* abilities ❑ Similarities with others ❑ Nondiscriminatory language	**Point of View** ❑ The point of view, if told by the character *with* a disability, is realistic ❑ The point of view, if told by the character *without* a disability, is realistic
Social Interactions ❑ Reciprocal relationships ❑ Acceptance ❑ Empathy, not pity ❑ Positive social contributions ❑ Respect ❑ Various relationships (friendships, victim/perpetrator, dependent/caregiver, pupil/instructor, fear/guilt, changes in others)	**Literary Quality of Text** ❑ Engaging theme or concept ❑ Plot is thoroughly developed, with a reasonable storyline ❑ Nondisabled characters are fully developed ❑ Description of settings enhances the story ❑ Style is appropriate for the story and age-level
Exemplary Practices ❑ Full citizenship opportunities ❑ Appropriate services ❑ Valued occupations ❑ Self-determination ❑ Attitudes and practices congruent with the era **Sibling Relationships** (if applicable) ❑ Wide range of emotions ❑ Opportunities for growth ❑ Relationships are reciprocal ❑ Family duties not unusually burdensome ❑ Aware of nature and effects of disability **Impact of Disability on Plot** ❑ Focus of book (teach about disability, include a character with a disability whose presence impacts the story, or disability is irrelevant) ❑ Additional information is provided to help readers learn about the disability	**Illustrations** (if applicable) ❑ Portrays characteristics of disabilities accurately in illustrations ❑ Portrays assistive/adaptive technology accurately, realistically, and contemporarily in the illustrations ❑ Illustrations interpret the story well ❑ Style of illustrations is appropriate to the story and age-level ❑ Plot, theme, characters, setting, mood, and information are enhanced through the illustrations ❑ Illustrations represent quality art ❑ Illustrations use color, line, shape, and texture artistically ❑ Layout and design of illustrations and text are visually appealing

Downloadable version available: Checklist for Choosing Children's Books That Include Characters with Disabilities

Given the importance of literature as a powerful conduit through which children, , and young adults learn social ideas about disability (Aho & Alter, 2018), it is incumbent upon teachers and other school personnel to educate themselves by reading relevant research, searching for quality literature rich in diversity, and making conscious decisions about appropriate books for their classrooms (Leahy & Foley, 2018). This article is one attempt to help educators meet these expectations.

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Factors Predicting the Successful Placement of Inclusive Post-Secondary Education Students in College Courses

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Abstract: The purpose of this study was to examine the impact of institution-provided training on faculty attitudes regarding the needs of students with exceptionalities, particularly in terms of classroom placement. Specifically, researchers examined (a) faculty members' attitudes regarding key supports that led to successful student placement, (b) obstacles or situations that would dissuade faculty members from accepting a student with intellectual and/or developmental disability (IDD) into their classes, and (c) the training and support needed for successful student placement. The study indicated the two most important supports instructors required to achieve successful placement of IDD students are (a) support from the Office of Disability Services, and (b) student motivation. These findings potentially inform staffing decisions and relationship development between faculty and the Office of Disability Services. Furthermore, the study showed that instructors have negative attitudes toward training provided by universities regarding treatment of students with exceptionalities, viewing this training as ineffective or unimportant. Limitations of the study and recommendations for future research are discussed.

Intellectual disability is classified as a neurodevelopmental disorder by The Diagnostic and Statistical Manual of Mental Disorders (5th ed.; DSM–5; American Psychiatric Association, 2013) and is characterized by deficits in general mental abilities, such as reasoning, problem solving, and academic learning. Referencing the Individuals with Disabilities Education Act (IDEA), persons identified with intellectual disabilities (ID) and/or developmental disability (IDD) usually have subaverage IQ scores and insufficient adaptive functioning skills which adversely impacts a child's/student's educational performance. According to data from the U.S. Department of Education (2018), there were approximately 423,000 individuals between the ages of 6 and 21 identified as having IDD and receiving Kindergarten-12th Grade special education services during the 2014-2015 school year. This number represented more than 8% of total students with disabilities and approximately 1% of the total school age population.

Students with IDD need support in post-secondary programs due to impairment in three specific domains: conceptual, social, and practical (APA, 2013; Think College, 2019). Research suggests that students with IDD would benefit from enrollment and continued support within post-secondary educational programs (Migliore & Butterworth, 2008). Since the Higher Education Opportunity Act (HEOA) 2008, the enrollment of students with IDD within inclusive postsecondary education programs is steadily increasing (Plotner & Marshall, 2014).

Inclusive Postsecondary Education
With the signing of the HEOA, the Comprehensive Transition and

Postsecondary Education Program for Students with Intellectual Disabilities (TPSID) was developed with the goal of providing students with intellectual disabilities with college experiences that effectively developed employment and life skills (The Higher Education Opportunity Act [HEOA], 2008). Largely because of the passage of this legislation, as of 2019, more than 271 college programs serve individuals with IDD in the United States. These include: 12 one-year programs, 78 two-year programs, 19 three-year programs, and 29 four-year programs (Think College, 2019), with 30 of these programs offering an on-campus residential component. Although these programs have increased in number since 2008, the need for providing post-secondary programs for students with IDD is essential, as the employment rate for persons with IDD is among the lowest of any other disability subgroups (Butterworth, Smith, et al., 2008; Siperstein, et al., 2013).

The infusion of post-secondary programs within higher education, allows for young adults with IDD to have a college type experience, is ripe for actionable research, which will potentially lay the foundation for new programs that better assist students with IDD. (Think College, 2019; Whirley & Gilson, 2019). For this field to gain traction, support of faculty members and instructors is critical (Lombardi et al., 2018). Rao (2004) indicates there are "attitudinal barriers" among faculty/staff concerning disability issues, defined as gender, age, experience and/or previous contact with people with disabilities, faculty rank, departmental affiliation, knowledge of disability laws, and disability type. Rao found faculty attitudes toward students with disabilities to be one of the primary determining factors to the success of university students with IDD.

Although Gibbons, et al., (2015) found a willingness among faculty and staff to welcome Inclusive Post-Secondary Education (IPSE) programs on campus, this work also revealed faculty and instructors' concerns regarding classroom placement of students with IDD, their personal responsibility, and questions around maintaining academic integrity. The Gibbons et al. (2015) study, administered the Attitudes on Postsecondary Education for Students with Intellectual Disabilities and Autism Survey, whose sample population included 152 faculty members at a single university located in the southeast. The descriptive statistics and demographic information of the Likert-type questions offered an overall positive view of integrating students with IDD into their university courses. In general, 64.7% of faculty surveyed agreed that modifying their teaching style to provide an equal opportunity for learning for all students, including those with IDD, could have a favorable outcome. On average, faculty somewhat believed (45.1% agreed/strongly agreed) that general population university students would feel uncomfortable having students with IDD in regular courses. Faculty indicated at least a somewhat positive agreement with the statement that "integrating students with IDD in their courses would impede routine educational activities" (47.1% agreed/strongly agreed). When faculty were asked if students with IDD would take more than their fair share of instructor time, 25.5% agreed or strongly agreed.

Sniatecki, et al. (2015) examined faculty attitudes and knowledge regarding college students with various types of disabilities and asked whether faculty would be interested in professional development related to students with ID. In this study, three categories of student disabilities were discussed: (a) physical disabilities, (b) learning disabilities, and (c) mental health disabilities; however,

the needs of students with IDD were not addressed. The sample size at one university was 123 (20.4%) faculty members. The results of the ANOVA performed on survey results, found that some faculty hold negative attitudes toward the provision of accommodations, with 4.9% ($n = 6$) of respondents reporting they agreed or strongly agreed with the concept that provision of accommodations compromises academic integrity, giving students with disabilities an advantage over those without disabilities. Participants also reported a lack of familiarity regarding the Americans with Disabilities Act (ADA) as it applies to students with disabilities (11.4% not familiar; 27.6% unsure).

Zhang et al. (2010) conducted an email survey of 206 faculty members from nine Southern institutions in a major public university system to identify key factors in providing students with disabilities quality education. The survey consisted of five constructs: (a) Knowledge of Legal Responsibilities, (b) Perceived Institutional Support, (c) Personal Beliefs Regarding the Education of Students with Disabilities, (d) Level of Comfort with Students with Disabilities, and (e) Provision of Accommodations to Students with Disabilities. The descriptive statistics showed an average score of 18.22 out of 24 possible points for the Knowledge of Legal Responsibilities construct ($SD = 3.31$). This demonstrated that those who responded had a good understanding of their legal responsibilities in providing reasonable accommodations to those with disabilities. The second construct consisted of questions related to Perceived Institutional Support with descriptive statistics showing an average score of 3.67 out of 5 possible points ($SD = 0.81$). The literature shows that faculty are more willing to support students with disabilities if they feel they, as instructors,

have support from the institution (Bourke, et al., 2000; Michaels, et al., 2002). Conclusions from the three reviewed studies helped form the foundation for the proposed study. Table 1 includes the conclusions and is a summation of the above reported studies.

Purpose of the Study
In 2008, the Higher Education Opportunity Act was signed, and Comprehensive Transition and Postsecondary Education Programs were developed with the goal of creating opportunities for people with intellectual disability to have a college experience that further developed their employability and life skills (Think College, 2019). The purpose of this study was to evaluate supports faculty members deem most important in predicting the successful class placement of students with IDD. This study sought to extend Gibbons et al.'s (2015) research on the relationship of previous exposure to individuals with IDD and the supports needed to impact the success or failure of a placement in an instructor's course by evaluating multiple supports and their relationships to successful placements. This study also aimed to further the research presented by Sniatecki et al. (2015), who noted training and workshops could be an effective way to change attitudes toward people with disabilities and suggested this be further studied by providing more evidence of the importance of training and workshops and their impacts on successful placements. Furthermore, this study aimed to extend the work of Zhang et al. (2010) regarding the willingness of faculty to provide quality services to students with disabilities by investigating faculty members' perceived needed supports to enact successful placement. Given the need for increased research into the supports required by instructors for placement of students with IDD in their courses, this study sought to answer the following research questions:

Table 1

Studies Relating to Faculty Perceptions of Perceived Support

	Purpose	Sample	Conclusion
Gibbons, Cihak, Mynatt, & Wilhoit (2015)	To explore college faculty and students' attitudes towards inclusive postsecondary education (IPSE) opportunities for students with ID.	152 university faculty and 499 university students from a single southeastern university.	Favor the development of PSE programs. Interactions with individuals with disabilities changed a person's attitudes and beliefs in a positive manner.
Sniatecki, Perry, & Snell (2015)	To examine faculty attitudes and knowledge regarding college students with various types of disabilities.	123 university faculty members at a mid-sized, public liberal arts university in upstate New York.	In general, positive attitudes toward college students with disabilities were found. Results suggested a negative attitude toward the provision of accommodations. A lack of knowledge regarding policies was noted, but with an interest toward PD.
Zhang, Landmark, Reber, Hsien Yuan, Oi-man, & Benz (2010)	To identify factors through a structural equation modeling model that influence the willingness of faculty to provide quality services to students with disabilities.	206 faculty members from nine institutions that are part of a major southern university who responded to an email request to complete an online survey	Improving faculty personal beliefs may be key to enhancing services for students with disabilities. Training programs and innovative interventions are needed.

1. To what extent are instructor beliefs regarding the successful placement of students with IDD predicted by the amount of training and support received from the institution?
2. To what extent do instructor's prior interactions (both personal and professional) with students with IDD predict their perception of a successful placement of a student with IDD in their course?
3. What conditions do instructors believe are important to the success of students with IDD in their classroom?

Method

Participants and Setting

This study was conducted across a Southeastern alliance of five universities. The alliance includes one large private university, two small faith-based private universities, and two large public universities. Each university has a well-established Inclusive Post-Secondary Education (IPSE) program that has existed on its campus between 4 to 10 years. Each program is a nationally certified transition program (CTP). In order to be approved as a CTP, a program must meet the following requirements outlined in the HEOA: (a) Be delivered to students physically attending the institute of higher education, (b) be offered by an institute of higher education that is participating in Title IV Federal Student Aid, (c) be designed to support students with intellectual disability in preparation for employment, (d) include an advising and curriculum structure, and (e) provide at least

50% of the program time in academics (college courses for credit or for audit, or internships) with other students without intellectual disabilities (Lee, 2009). Surveys were emailed to the five program directors, and program directors were asked to either email the survey directly to instructors that have had CTP students in their courses or to provide instructor email addresses for researchers to directly send the survey to faculty and staff. A total of 237 surveys were emailed. Of the 63 responses received, 26 were from the four-year private university (41.2% of respondents) and 35 were from the 4-year faith-based private universities (55.5%), with two non-respondents (3.17%).

Out of the 63 faculty members who responded, 57 respondents had experience with students with IDD auditing their courses. Their disciplines were identified as business (5.3%), education (5.7%), languages (10.5%), physical education (8.8%), psychology/sociology (8.8%), sciences (10.5%), social work (5.3%), and 43.9% identified as other. Thirty-three respondents (57.9%) identified as female, and two preferred not to answer (3.5%).

Procedures and Instrumentation
Prior to the implementation of this study, approval was obtained from the authors' Institutional Review Board (IRB) for conducting research. Based on the review of existing literature on IPSE, a 15-item Likert-type online survey was developed using Qualtrics as the survey development and administration tool (see Appendix). Survey questions assessed demographics, experience in teaching students with IDD, amount of professional training offered by the university of employment to prepare the instructor to work with students with IDD, as well as past and present exposure to individuals with IDD outside of the classroom. Survey items were vetted by a panel of experts to examine the validity of the instrument. The panel consisted of a statistician with extensive knowledge of tests and measurements, the director of an IPSE program, and a special education faculty member at a large research institution. The researcher sent a first draft to the panel who provided suggestions for improvement based upon the variables under study. The survey was revised as suggested and distributed back to the panel for final approval. Following revisions and distribution, survey participants were also asked to rate the following conditions as they pertained to success of students with IDD in their courses on a scale of 1-6, with 1 being *Not Important* and 6 being *Very Important* to successful placement: (a) the student's academic capabilities, (b) faculty training, (c) instructor's knowledge of the student's disability, (d) study skills support, (e) communication with IDD program officials, (f) academic rigor of the course, (g) university provided support received by the student, (h) Office of Disability Services support, (i) instructor's knowledge of appropriate accommodations/modifications for the individual student, (j) student's mentor program, and (k) the instructor's ability to relate one-on-one with the student.

Results
Table 2 presents correlations among focal survey items. Results indicate a strong correlation between support of the placement and IPSE staff availability ($r = .41$). The following sections address the results pertaining to research questions 1 through 3.

Amount of Training Received from the University
Research Question 1 assessed to what extent instructor beliefs regarding the successful

Table 2

Correlations among Study Variables

	1	2	3	4	5	6
1. Exposure ID	-	-.13	.36**	-.01	.01	.04
2. University Provided Training	-.13	-	-.06	.08	.03	.01
3. Prior Exposure	.36**	-.06	-	.01	.22	.27*
4. Instructor/student interaction	-.01	.08	.01	-	-.10	.09
5. Staff Availability	.01	.03	.22	-.10	-	.41
6. Support of placement	.04	.01	.27*	.09	.41**	-

* Correlation is significant at the 0.05 level. **Correlation is significant at the 0.01 level

placement of students with IDD are predicted by the amount of training and support received from the institution ("What amount of training regarding individuals with intellectual/developmental disabilities did you receive from your university prior to placement of a student with IDD in your course?). Correlation results show that the amount of training provided by the university was not a valid predictor of whether the instructor considered the placement successful, $r = .01$, $p = .961$. An examination of the descriptive statistics regarding the amount of training that instructors received from their universities showed that 41.4% responded with zero training ($n = 64$), and 39.7% responded with less than 2 hours. As displayed in Figure 1, this data mean 80% of instructors received two or fewer hours of training. Those responding that they had received 2-5 hours of training made up 13.8%, and only 1.7% received 6-8 hours of training from their universities.

Prior Exposure to Students with IDD. Research Question 2 assessed the extent to which instructors' prior interactions (both personal and professional) with students with IDD predict whether the instructor felt the student placement was successful; specifically, one predictor variable assessed previous teaching experience ("How much previous teaching experience with students with IDD did you have prior to accepting a student into your course?"), and two variables assessed past and present exposure outside of the classroom ("Describe the extent of your past and present exposure to individuals with IDD outside of the classroom," and "How much interaction did you have with the student(s) with IDD in your course prior to the beginning of the semester?"). The results showed that prior teaching experience of students with IDD ($\beta = -.06$, $p = .659$) and exposure to individuals with IDD ($\beta = .29$, $p = .046$) were significant predictors of instructors' perceptions of whether the student placement in the course was successful, $F(2,52) = 2.14$, $p = .128$.

Interaction with the student prior to the beginning of the course was not a valid

Figure 1

Amount of Training Received by Instructors Regarding Students with IDD

University Provided Training

6-8 hours
2%

2-5 hours
14%

Zero Training
40%

Less than 2 hours
40%

■ Zero Training ■ Less than 2 hours ■ 2-5 hours ■ 6-8 hours
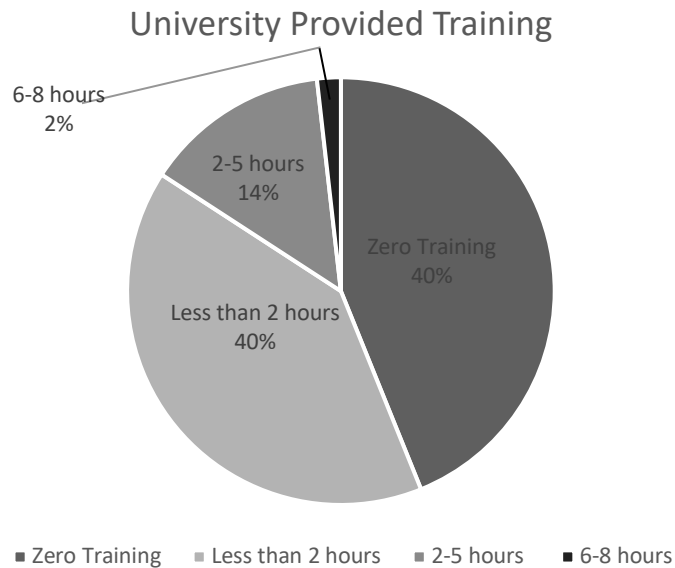
predictor to the instructor of successful placement, *β* = .23, *p* = .434.

Conditions Necessary for Successful Placement

Research Question 3 assessed which conditions instructors believe are important to the success of students with IDD in their classrooms (see question 12 of survey in Appendix). Table 3 shows the means and standard deviations for each assessed condition. Results indicated the two lowest-rated conditions to instructors were the student's academic ability (*M* = 3.30) and availability of a faculty training workshop (*M* = 4.17). The two highest-rated supports were the support of the Office of Disability Services (*M* = 5.56) and student motivation (*M* = 5.30).

Discussion and Implications

The researchers expected that training provided to instructors by the institution would be the strongest support determining

the success or failure of the placement of a student with IDD in their courses. Based on survey responses, there is no empirical support of this hypothesis. However, instructors do feel that the support and availability of the IDD program staff is significantly important to the success or failure of the placement, as noted in Table 2. Additionally, the individual instructor's previous exposure to students with disabilities is important to their perceptions of the student placement.

University Provided Training

One support not correlated with instructors' support of student placement was the training the university provided to the instructor, *β* = .01, *p* = .961. Gibbons et al. (2015) discussed the need for faculty training as an imperative for future growth of programs. Sniatecki et al. (2015) felt further investigation of training and workshops would be important to the growth of IPSE programs going forward. Zhang (2010) also noted the importance of

Table 3

Instructor Supports

Factors Predicting Success of Student Placement	M	SD
Student's academic capabilities and/or background knowledge prior to the course.	3.30	1.35
University –provided orientation to student life (i.e. similar to freshman orientation	4.35	1.41
Faculty training/workshop provided by the University	4.17	1.40
Instructor's knowledge of the student's particular disability	4.38	1.32
Study skills support and/or tutoring for the student	4.57	1.36
Consistent communication between faculty and IDD student's program director and/or staff	4.63	1.35
The format and/or academic rigor of the class	4.41	1.31
University provided support received by the student	4.97	1.19
University Office of Disability supports provided to the student	5.56	1.29
Student motivation or demonstrated efforts to succeed in the class	5.30	.94
Instructor's communication directly with the student	4.93	1.19
Instructor's knowledge of appropriate accommodations/modifications for the student	5.23	1.01
Availability of IDD staff members to instructors	4.58	1.03
Instructor's ability to related to the student one-on-one	4.66	1.16
The student mentor support program	5.03	1.19

faculty training in supporting students with disabilities. The current study showed 80% of instructors surveyed had received 0-2 hours of training was surprising. The ability to evaluate the importance of training is hindered by the lack of training received. A future direction for this study may be to investigate the type of training received (rather than just the amount of training) and whether this training was mandatory for instructors.

Prior Exposure

Gibbons et al. (2015) noted previous exposure to individuals with IDD was important to the positive attitude of instructors. In this study, the most statistically significant support was previous exposure of the instructor to students with IDD. The exposure may have been in or out of the classroom and may have included having had previous students in their courses, knowing someone with an intellectual disability, or possibly having a family member with IDD. Just as students with IDD are more comfortable in situations of which they have had previous knowledge (Izzo & Shuman, 2013), this study indicated instructors are more comfortable with placements if they have some familiarity with IDD.

Support for Successful Placement

Research Question 3 is based on survey question 12, which lists 15 possible supports that instructors may deem important to the successful placement of a student with IDD. The results of this research show that instructors are least concerned with students' academic ability. Students that enroll in CTP programs receive an individualized learning plan for each course audited; thus, the academic plan should be based upon their individual ability levels. Program staff typically handle the development of such learning plans. The second least-important support was, surprisingly, faculty training workshops. It is unknown if the workshops themselves are not providing the information that instructors feel they need or if the time taken up by the workshops is felt to be better directed to other purposes. This is an item that would benefit from further analysis.

According to our findings, support from the Office of Disability Services is most important to instructors, which indicates further investigation would be helpful to determine which services provided by the Office of Disability Services are most utilized. The researchers of the current study have considered that survey participants may have misinterpreted survey questions due to participants' prior knowledge of terms. For instance, it is unclear whether participants were aware of the differences between the IPSE Program and the Office of Disability Services.

The second most important support is one that students themselves supply: motivation. Many students with IDD find school to be energetically draining and their experience of school to be demotivating. Therefore, it is not an overstatement to characterize the personal decision to attend an IPSE program as "brave," as the decision itself involves risk and speaks to a strong desire for personal development. Instructors of traditional students, as well as students with IDD, appreciate students who are willing to work to attain more.

Limitations and Future Directions

Given the limitations of this study in terms of diversity and sample size, caution should be used in generalizing these results; additional data are needed to ascertain whether these results are consistent across a broad variety of faculty and staff at diverse universities. As IPSE programs continue to grow in the United States, both diversity and sample size should increase.

In a future study, it will be important to determine acceptable staffing-to-student ratios in IPSE programs and if any advisories concerning these ratios should be committed to program heuristics/policy. Future studies would benefit from examining current staff-to-student ratios, specifically, in terms of whether these programs are adequately or overstaffed, and what effect staff-to-student ratios have on student success. Additionally, understanding roles of staff members might assist in understanding the amount of staff time available to devote to instructors and course time.

Although the amount of training provided by the university was not correlated to the successful placement of students with IDD in instructors' courses, the relationship between training and perceptions of importance/effectiveness of training is worth exploring further. Training should always proceed with intentional information that is reflective of the time spent in preparation.

Conclusions

The Office of Student Disability support is the most important factor to instructor confidence in the efficacy of IDD student course placement. This is obviously a support

that the university must provide. Zhang et al. (2010) noted a correlation between university-provided supports and support instructors offered to students with disabilities, and it is reasonable to expect that instructors are more willing and able to support students when they feel they are being supported by the university. The second most important support, IDD student motivation, is not provided by the university, but by the individual student. A student's desire to achieve more guides the student's work ethic.

Exposure of instructors to individuals with intellectual disabilities is important, but previous teaching experience of students with IDD was not a determining factor of successful placement. It is an appropriate determination that an individual instructor's level of comfort in working with an individual with IDD is a stronger predictive support than years of teaching students with IDD.

One result—somewhat surprising to researchers—was the apparent insignificance of university-provided training in the estimation of instructors. It is unclear whether this is precipitated by lack of quality training provided or lack of engagement with university-provided training by instructors.

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Appendix

A Survey of Instructor Supports for Inclusive Post-Secondary Higher Education

Thank you for agreeing to help in this study about experiences, training, and support for instructors of students with intellectual/developmental disabilities (IDD). All responses will remain anonymous and will be used only in combination with the response of others. This survey should take approximately 10 minutes for completion. In addition, there are no right or wrong answers; therefore, it is very important for you to give us your honest opinion on each question. There will be no consequences if you choose not to participate. Any questions you have may be directed to your survey administrator, Jennifer Graves at jagraves@memphis.edu. This survey has been approved by the University's IRB committee. Thank you for your time.

Q2. Which of the following best described your university type?
1. 2-year public
2. 2-year private
3. 2-year faith-based
4. 4-year public
5. 4-year private
6. 4-year faith based

Q3. What is the discipline of the classes you teach that have students with ID?
1. Sciences
2. Mathematics
3. Languages
4. Business

5. Education
6. Social Work
7. Psychology/Sociology
8. Physical Education
9. Other

Q4. What is your average size class that contains students with IDD?
1. Fewer than 10 students
2. 11-20 students
3. More than 20 students

Q5. Which of the following best described the emphasis of your university?
1. Teaching-based
2. Research-based
3. Balanced (equal emphasis on research and teaching)

Q6. What is your gender?
1. Male
2. Female
3. I prefer not to answer

Q7. How would you describe your role at your college or university?
1. Adjunct or part-time instructor
2. Full-time instructor
3. Assistant professor
4. Associate professor
5. Professor

Q8. How many years have you taught in higher education?
1. 1 year or less
2. 2-5 years
3. 6-10 years
4. 11-20 years
5. More than 21 years

Q9. How much previous teaching experience with students with intellectual disabilities/developmental disabilities did you have prior to accepting a student into your course?
1. Less than one year
2. 1-5 years
3. 6-10 years
4. 11-15 years
5. More than 15 years

Q10. What amount of training regarding individuals with intellectual/developmental disabilities did you receive from university prior to placement of a student with IDD in your course?
1. None
2. Less than 2 hours
3. 2-5 hours
4. 6-8 hours (or one day)
5. 2-5 days

Q11. Describe the extent of your past and present exposure to individuals with intellectual disabilities **outside** of the classroom.
1. No exposure
2. Some/Limited
3. Personal knowledge of individual with IDD (moderate)
4. Family member with IDD (high)

Q12. Rate the following conditions as it pertains to the success of students with IDD in your course(s). With 1 being not important to success and 6 being very important to success, 7 not applicable.
Student's academic capabilities and/or background knowledge prior to course
University-provided orientation to student life (i.e. similar to freshman orientation)
Faculty training workshop provided by the University
Instructor's knowledge of the student's particular disability
Study skills support and/or tutoring for the student

Consistent communication between faculty and IDD student's program director and/or staff

The format and/or academic rigor of the class

University provided support received by the student

University Office of Disability supports provided to the student

Student motivation or demonstrated efforts to succeed in the class

Instructor's communication directly with the student

Instructor's knowledge of appropriate accommodations/modifications for the student

Availability of IDD staff members to instructors

Instructor's ability to related to the student one-on-one

The student mentor support program

Q13. How much interaction did you have with the student(s) with IDD in your course prior to the beginning of the semester?

1.   I had no interaction with the student(s).
2.   I saw the student(s) but did not converse with the student(s).
3.   I had a conversation with the student(s).
4.   I had a meeting with the student(s).
5.   I had more than one meeting with the student(s).

Q14. To what extent are staff of the inclusive post-secondary education program at your college or university available to answer questions or assist with a student if you made such a request?

1.   IPSE staff are never available
2.   ISPE staff are rarely available
3.   IPSE staff are occasionally available
4.   ISPE staff are frequently available
5.   ISPE staff are almost always available
6.   IPSE staff are always available

Q15. Do you believe that students with IDD should be placed in your course?

On a scale of 1-10 what is your support of the following statements.

1.   I definitely believe students with IDD should be placed in my course.
2.   I am fine with the placement of IDD students in my course.
3.   I am unsure concerning the placement of IDD students in my course.
4.   I am somewhat uncomfortable with the placement of IDD students in my course.
5.   I do not believe students with IDD should be placed in my course.

Autism in the Classroom: Teacher Self-Identified Factors Impacting Success

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Abstract: With the continued rise of autism in public schools, it is imperative to understand factors that impact teacher success in working with students with ASD. In the current study, 59 teachers in self-contained classrooms for children with autism identified the most rewarding and challenging aspects of their jobs, as well as perceived program strengths and weaknesses in their district. The majority of teachers reported student improvement as highly reinforcing, but experienced challenges related to staff, training, and resources. Predominant program strengths were identified as collaboration amongst colleagues and commitment to students, while weaknesses related to training, administrative support, instructional materials and curriculum. Suggestions for enhancing autism classrooms and programs are discussed with implications for supporting current teachers in the classroom and training future teachers to serve children with autism.

With one in fifty-four children diagnosed with autism (Maener et al., 2020), the educational system has seen a drastic increase in the number of individuals served under the category of autism spectrum disorder (ASD). Thus, it is important to consider the role and responsibilities of teachers who serve this population. The prevalence rates indicate the need for public school programs to develop interventions, supports, and services to address the complex needs of students with autism (Wong et al., 2015), which leaves a growing concern over how to train and support special educators to successfully work with children with ASD.

This training need, which has been a sustained national issue, directly impacts local education agencies, which are mandated under federal law to provide effective, research-based services to individuals with disabilities (IDEA, 2004). In 2002, the U.S. Department of Education conducted a nation-wide study and determined that over 13 million teachers, who were currently providing special education services, lacked appropriate preparation to serve learners with special needs. These data translate to over 800,000 students with disabilities served by teachers without appropriate certification (Brownell et al., 2018). Moreover, in analyzing data provided by the U.S. Department of Education (2011), Brownell et al. (2018) also reported that the special education population continues to rise at much higher rates than the general education population, while the number of teachers entering the field is half the amount of the teachers exiting the field. Given this alarming statistic, it is necessary to understand the factors that will attract more special education teachers to the field and provide them with the appropriate tools, as well as support, to work effectively with children with autism.

In 2017, Berry reported special education teacher satisfaction was correlated with (a) administrative support, (b) collaboration and support from general educators, and (c) shared responsibilities in educating students with disabilities, as well as, general understanding from their school in regard to their role. In order to understand how each of

these factors play a role in teacher self-efficacy, it is important to delineate the role that administrative support plays in autism program quality. The literature identifies administrators as key decision makers within the school, who play a pivotal role in scheduling, delivery of services and access to resources and training (Forman et al., 2009). Despite the weight of this role, most administrators lack autism specific knowledge needed to facilitate appropriate instructional programming in schools, which negatively impacts the quality of services provided to both teachers and students (Lauderdale-Littin & Haspel, 2018).

Evidence-based practices for autism identified in the literature necessitate access to categorical training for teachers, collaboration with service providers, and curricular resources related to communication, functional skills and intensive programming (Odom et al., 2010). Few administrators have the complexity of knowledge needed to make critical decisions related to autism programming and promote a culture of collaboration and understanding that is necessary for educating children with autism (Whitmer, 2013). Moreover, while administrators are acutely aware of both financial and legal responsibilities related to this population (Whitmer, 2013), financial constraints significantly hinder decision-making in relation to training, resources and capacity-building (Kucharczyk et al., 2015; Whitmer, 2013). As such, administrators often turn to other providers within their building, such as child study team members, to assist in critical decisions. Unfortunately, most of these service providers also have limitations in understanding autism specific needs related to evidence-based practices, which negatively impact their capacity to assist in programmatic decisions (Sansosti & Sansosti, 2013). Essentially, this creates a juxtaposition for teachers wherein they are expected to implement highly effective practices for students with autism without the necessary resources, training, or support from others.

Training in evidence-based practices, as well as competency in delivering these practices, relate to both teacher success and the desire to continue working with students with autism (Corona et al., 2017). Teachers bear a complexity of responsibilities in educating students with autism that teachers of typically developing students do not require; they must assess the individual needs for all of their students, identify and align appropriate interventions for each of these needs, and then implement each of these interventions for their students (Brownell et al., 2010). This process necessitates a breadth of training, that includes both diagnostic and intervention knowledge, to accurately assess students across academic, functional, and communication domains, and subsequently implement an array of individualized evidence-based interventions for each student (Brownell et al., 2010). However, the depth and complexity of this skill set requires substantial categorical training in autism evidence-based practices (Lauderdale-Littin & Brennan, 2017), which many teachers lack upon entering the field. Lack of this training directly impacts teacher confidence and competence in the classroom (Hart & Malian, 2013). As such, this study addresses the following questions:

1. What are the ways in which teachers of students with autism derive satisfaction from their jobs?
2. What components of their job do teachers of children with autism find challenging?
3. Where do teachers feel their districts need to improve their autism specific programming?
4. In what ways do teachers feel their programs are serving students with autism well?

Method

Participants

Participants included 59 preschool – 12th grade teachers working in self-contained classrooms for students eligible under the category of autism spectrum disorder within six north eastern suburban school districts. The majority of the participating teachers were female (81.1%), white (86.6%), and had been teaching for an average of 10 years (see Table 1). Participating school districts were involved in a larger autism program improvement project. Throughout the districts, teachers were required to participate in training, and complete associated measures, as part of their yearly contractual professional development. They were not required, however, to allow their data to be used for research purposes. As such, of the 62 classroom teachers participating in the autism program improvement project, data in the current study reports only on the 59 teachers (95%) who consented to participate.

Procedure/Measures

All research procedures were reviewed and approved by the University Institutional Review Board. Packets of measures were provided to teachers and completed during an introductory presentation describing involvement in the autism program improvement project. For this study, information from a demographic survey, Teacher Perception of Administrative Support measure, and open ended job satisfaction questions were utilized. Descriptions of the measures are as follows: *Demographic Survey*: A brief questionnaire was administered to teachers to collect such demographic information as race, number of years teaching, level of education, grade level taught, and number of professional development hours in the last year. This measure allowed researchers to understand the type of educational environment that the children and teacher shared.

Teacher's Perception of Administrative Support: This researcher developed measure was created utilizing questions based on administrative support findings from the literature. The administrative support questionnaire consists of 16 close-ended questions assessing satisfaction with administrative program support (with choices ranging from 'not very satisfied' to 'satisfied'). Specific questions included: "How satisfied are you with your building levels adminsitrator's support of the special education program?", "How satisfied are you with the way your building level administrator addresses discipline issues involving with special needs?", "How satisfied are you with your building level administrator's knowledge of special education guidelines?."

Table 1

Participant Demographics

Demographics	$n = 59$
Gender (% female)	81.1%
Ethnicity (% white)	86.6%
Education (% Master's Degree)	38.8%
Number of Years Taught	10.06
Professional Development Hours (1-year)	35.84
Grade Level Taught (% preschool/elementary)	58.2%
Grade Level Taught (% secondary)	41.8%
Number of Students in Classroom	5.54
Number of Staff in Classroom	4.05

Job Satisfaction Questions: This researcher-developed measure was comprised of seven written open-ended questions related to teacher job satisfaction as well as autism program quality. Specific questions included: "What do you believe to be the most difficult part of your job?", "What do you believe to be the most rewarding part of your job?", "What do you consider the strongest component of the special education program?", "What do you consider the weakest component of the special education program?", "How much of your own money do you spend on classroom supplies each year?", "What improvements do you suggest for the ideal program for students with ASD?" and "What additional resources are needed for the ideal classroom for students with autism?" These questions allowed the researchers to understand factors pertaining to both individual and program-related job satisfaction.

Close-ended questions were analyzed via descriptive statistics, while data from open-ended questions were grouped and coded based on topics of response. Researchers utitlized content analysis of data collected from open-ended survey questions (Hsieh & Shannon, 2005) to formulate reported categories (Rossman & Rallis, 2003). Themes and descriptors were identified for each of the following areas: a) most rewarding aspect of job, b) most difficult aspect of job, c) resources needed for ideal classroom, d) strongest components of program, e) weakest components of program, and f) suggested improvements for optimal program. The first three categories related to individual job satisfaction and/or personal experience, while the latter three categories related to programmatic or global factors within their districts.

Results

All participants (n = 59) responded to the Demographic Survey, 92% of participants (n = 54) responded to the Teacher's Perception of Administrative Support measure, and 78% of participants responded to the open-ended Job Satisfaction questions (n = 46). Results indicated highly consistent teacher responses in identifying the most rewarding aspects of their jobs, with 54 responses related to seeing student improvement (see Table 2); 92% of teachers included responses that cited student growth, attainment of goals, mastering skills, and increased independence as critical factors in job satisfaction. Additional responses related to building relationships with students and parents, as well as enjoying seeing students learn (12). However, when asked to identify the most difficult part of their jobs (see Table 3), a variety of responses were provided with 22 responses relating to challenges with paraprofessionals, followed closely by issues with curriculum and programming (19). Consistencies were noted within subcategories of these responses, which included difficulties with oversight and management, limitations resulting from staff/curriculum, or lack of accessibility. Teachers also cited student behavior issues (11), workload (11), and materials/instructional tools (6) as concerns. Data regarding teacher satisfaction in each of these areas substantiated these responses, with only 59% of teachers indicating satisfaction with district's ability to address behavior issues, 54% of teachers satisfied with time allocated for completing lesson plans, 31% of teachers indicating satisfaction with time allocated to complete Individual Education Programs (IEPs), and 19% of teachers satisfied with the amount and type of resources provided by their district.

When asked to identify resources for an ideal classroom (see Table 4), the highest number of responses (34) pertained to instructional materials and supplies, with teachers reporting spending an average in excess of

Table 2

Teacher Identified: Rewarding Job Aspects

Categories	Total Responses	Subcategories
Seeing Student Achievement	54	Student growth or progress (37)
		Individual accomplishments/success(10)
		Mastering or achieving goals (4)
		Attaining independence (3)
Developing Student Relationships	12	Dedication to/working with students (6)
		Positive interactions with students (4)
		Parent interactions (2)

Table 3

Teacher Identified: Difficult Job Aspects

Categories	Total Responses	Subcategories
Managing Paraprofessionals	22	Oversight and management (9)
		Limitations in training staff (7)
		Limited or lack of staff (6)
Responsibilities of Curriculum/Programming	19	Individualizing instruction (10)
		Curriculum management (5)
		Access to curriculum (2)
		Limited student progress (2)
Managing Student Behaviors	11	Intervening with behaviors (6)
		Student behaviors (5)
Mangaging Daily Workload	11	Paperwork (4)
		Amount of work (3)
		Class size (1)
		Prioritizing/time management (3)
Limitations with Instructional Materials	6	Lack of resources (5)
		Limited funds for supplies (1)
Limitations in Training	4	Lack of training (2)
		Not having the right training (2)
Lack of Collaboration/Support	4	Follow up/support from parents (2)
		Lack of administrative support (1)
		Communication with parents (1)

$550.00 of their own money each year for their classrooms (M= 565.50; range 25.00-2000.00). Many responses related to the need for basic classroom supplies and materials, however, technology for instruction and communication devices for students were also noted. Teachers also identified needing resources pertinent to curriculum and programming (15), such as having access to the appropriate curriculum, as well as providing programmatic options across domains (e.g. functional life skills, community-based instruction). Training (14) was cited alongside curriculum and programming, with professional development for teachers at the top of their wish list, followed by training for paraprofessionals. Lastly, collaboration with others was identified (9), with the desire for more time with staff as well as increased support from administrators.

In regard to district programmatic factors, only 55% of teachers were satisfied or very satisfied with their building administrator's support of autism programs. The majority of positive program factors pertained to support from peers (31), with 67% of

Table 4

Teacher Identified: Ideal Classroom Resources

Categories	*Total Responses*	Subcategories
Adequate Instructional Materials/Tools	34	Classroom supplies/equipment (11)
		Technology for classroom (7)
		Instructional materials (6)
		Assessment materials(3)
		Sensory (5)
		Communication devices (2)
Access to Appropriate Curriculum/Programming	15	Appropriate curriculum (8)
		Assessment materials(3)
		Program options for students (2)
		Transition programs (1)
		Access to general education curriculum (1)
Increased and Specific Training	14	Professional development for teachers (8)
		Training for paraprofessionals (5)
		Training for parents (1)
Allocation of Time for Collaboration/Support	9	Time for staff meetings (5)
		Administrative support (2)
		Behavioral support (1)
		Collaboration with medical (1)
Increased Classroom Space	4	Additional/flexible space (3)
		Larger space (1)

responses citing collaboration, dedication and support from colleagues (including fellow teachers as well as team members with expertise in autism) as one of the strongest features of their program (see Table 5). Additional factors related to program strength (13), including IEP-related professional development, vocational opportunities for students, efficacy of instruction, and small class sizes.

A plethora and diversity of responses were provided in relation to programmatic weakness, with most teachers providing multiple responses per question (see Table 6). Barriers to satisfaction with their program included challenges with insufficient training (15), lack of administrative support (14), and lack of instructional materials and resources, such as technology (13), with only 31% of teachers reporting satisfaction with the current technology in their classroom.

Compounding these programmatic deficiencies, were issues with cohesion and consistency in curriculum programming (12), and oversight and management of paraprofessionals (10). In fact, only 28% of teachers reported satisfaction in their districts' description of staff roles and responsibilities in regard to working with students with autism, with many teacher responses indicating the need for staff training, as well as increased time for planning with staff (8). It was also noted that 61% of teachers expressed limited or no satisfaction in being able to access appropriate support personnel or specialists when needed. Collectively, each of these factors are related to teacher ability to successfully teach students and fulfill the duties and requirements of their job. As such, alignment was noted in the prioritization of responses for program improvement (see Table 7): increased training (25) was cited

Table 5

Teacher Identified: Program Strengths

Categories	Total Responses	Subcategories
Supportive Teachers/Colleagues	31	Collaboration and support (23)
		Dedication/commitment (5)
		Expertise and training (3)
Appropriate ASD Programming/Services	13	Program options for students (4)
		Effective programs (3)
		IEP training/resources (3)
		Low teacher: student ratio (2)
		Data collection (1)
Working in Positive Classroom Climate	2	Love for students (1)
		Classroom climate (1)

Table 6

Teacher Identified: Program Weaknesses

Categories	Total Responses	Subcategories
Lack of Training	15	Lack of training for teachers (8)
		Lack of training for staff (6)
		Irrelevant training (1)
Lack of Administrative Support	14	Lack of support/knowledge (9)
		Limited guidance/direction (5)
Lack of Instructional Materials/Tools	13	Insufficient curriculum/materials (5)
		Lack of supplies (5)
		Access to technology (3)
Inconsistent Curriculum/Programming	12	Cohesion of curriculum across classes/buildings (6)
		Consistency in programming/data collection (4)
		Programming across domains (2)
Insufficient Paraprofessional Support	10	Sufficient staff (5)
		Trained/knowledgeable staff (2)
		Staff schedules (2)
		Respect from staff (1)
Limited Collaboration	8	Time to collaborate (5)
		Lack of planning w/teachers (3)
Limited Communication	2	Lack of communication (2)

as a critical recommendation in 39% of teacher responses, followed by recommendations for guidance on curriculum and cohesion in programming (20). Additional suggestions included planned meeting times for collaboration (10), consistency and retention of trained staff (9), and allocating funds for supplies and classroom resources (8), such as iPads, smartboards and sensory table.

Response rates varied for questions pertaining to teacher intentions for remaining in their positions; 53 teachers responded when asked if they enjoyed teaching, and only 32 teachers responded to their intentions for remaining in the profession. Of these teachers, 100% of responses indicated they enjoy teaching students with autism, and that they intended to remain in the profession, despite challenges noted with their positions and programs.

Table 7

Teacher Identified: Optimal Program Suggestions

Categories	Total Responses	Subcategories
Increased Training	25	Training for teachers/staff (20)
		Training for administrators (5)
Consistent ASD Curriculum/Programming	20	Handbook/guidance (4)
		Consistent programming/data collection (4)
		Program options (4)
		Set curriculum (3)
		Research-based curriculum (2)
		Programming across environments (2)
		Time to teach (1)
Increased Time for Collaboration	10	Planning time (7)
		Access to BCBA or specialists (2)
		Planning with general education (1)
Access to Trained Paraprofessionals	9	Consistent staff (3)
		Trained staff (3)
		Low or 1:1 ratios (2)
		Staff retention (1)
Access to Appropriate Instructional Materials/Tools	8	Access to technology (6)
		Adequate materials/supplies (2)

Discussion

factors related to teacher satisfaction in working with students with autism, as well as illuminate substantial challenges posed in and outside of the classroom. More significantly, this study provides specific insight into the types of challenges that affect a teacher's ability to successfully teach a student with autism, and pinpoint where further support and training is needed.

Significant among the findings was teacher identification of student growth and achievement as the most rewarding aspect of their job. For students with autism, this translates to teacher training in evidence-based practices, a critical area of concern within the field (Odom et al., 2010). These data affirm the argument that categorical training for special education teachers is not only essential for preparing them for the field, but also instrumental to sustaining their role as educators. These data also substantiate prior literature indicating that teachers need to feel effective in order to remain in their positions (Corona et al., 2016), and should be used to inform both pre-

These results provide critical insight into service teacher training programs as well as in-service training, with targeted instruction on evidence-based practices for students with autism.

Further analysis of results indicates consistency in responses across individual job satisfaction and program strengths that substantiate the connections between teacher self-efficacy and administrator support. Key areas impacted by administrators included training, resources, and curriculum. These findings corroborate studies indicating lack of administrative knowledge affects key decisions regarding teacher and staff training, accessibility to appropriate instructional resources and district ability to build program capacity (Kucharczyk et al., 2015; Lauderdale-Littin & Haspel, 2018; Whitmer, 2013).

Teachers in this study also articulated individual challenges in accessing appropriate curriculum and instructional materials, which related to programmatic weaknesses with limited curriculum and lack

of supplies. Funding for autism specific needs is determined by administrators, and limited understanding of these needs is directly reflected in appropriate allocation of resources for classrooms (Whitmer, 2013). These types of challenges were also identified in responses regarding consistency in instruction and cohesion of programs across the district; affirming the literature that suggests limited understanding of autism-specific programming results in little oversight of instruction and lower autism program quality (Odom et al., 2010). This issue also affects administrative decisions regarding training and instruction as teacher-reported difficulties in individualizing programs relates to sufficient training on implementation of evidence-based practices; a frequent response regarding program weakness.

Rounding out this complex issue, are challenges with paraprofessionals, who are needed to maintain instruction and programming for students. Teachers expressed difficulties in oversight and management of staff, while simultaneously raising program concerns relating to district ability to hire appropriately trained staff to effectively support students. Unfortunately, this also related to limited administrator knowledge of autism programming and instruction, and hinders district ability to enhance services for students (Kucharczyk et al., 2015).

Distinctions were noted in the prioritization of responses across categories as well as the rate of responses across categories. In personal job-related questions, teachers prioritized concerns that would have an immediate or direct impact on their classroom, such as sufficient classroom supplies, increased curricular materials, appropriate assessment tools, and technology. For the program related questions, teachers prioritized larger issues with more distal effects, such as increased overall training, guidance from administrators, access to a research-based curriculum, and cohesion in programming across the district. Distinctions were also noted across positive versus negative categories, with multiple answers provided per question for difficulties with job and programmatic weaknesses versus rewarding aspects of job and program strengths. It is perceived this rate in response might pertain to greater concerns than successes in the classroom, as well as an opportunity to constructively address issues, such as the significant amount of personal expenditure incurred for classroom expenses, outside the confines of their district.

Themes were noted across two major areas: competency as teachers and efficacy in instruction. These themes are consistent with the literature as, for career longevity, teachers need to have a feeling of confidence and competence in their ability to perform their job; leading to student achievement (Yost, 2006). The ability to meet student needs, and promote learning, is related to teacher self-efficacy, or ability to succeed (Goddard et al., 2000). Teachers who report having a sense of self-efficacy exhibit higher levels of performance and student achievement (Klassen & Tze, 2014) and also report being more satisfied with their current position (Perrachione et al., 2008). In order to foster a feeling of self-efficacy teachers need to be provided with additional instruction related to managing and training staff, implementation of evidence-based practices for students with autism, resource development, and collaboration. Gaining these skills will promote increased self-efficacy and ability to advocate for themselves and their students. Teachers need to enter the field with adequate knowledge and be supported within their roles in

districts, as well as mentored as new teachers (Berry & Shields, 2017). Moreover, it is important that teachers feel supported by others within their roles, and that collaboration with others fosters a sense of responsibility, a key factor in teacher satisfaction. All of these issues are intrinsically tied to teacher satisfaction, which must be tackled through bold, collaborative measures within districts and higher education, in order to address the surging population of autism in schools, and ensure optimal outcomes for students.

Limitations in this study pertained to locale and types of measures utilized. All of the participants in this study taught in a self-contained classroom for individuals with ASD in the state of New Jersey. As such, their classroom sizes were relatively uniform, as per state code NJAC 6A:14-4.7 (2016), which stipulates a class size of 6 students and a staff to student ratio of 1:2. Therefore, teacher responses might have varied if they were in a different type of classroom, with a higher number of students, or in a different state with different regulations for teaching in autism specific classrooms. Moreover, the students in the self-contained classrooms for individuals with autism had similar types of needs related to intensive instruction and behavioral support. Therefore, responses were reflective of these roles and might have varied if a greater diversity of students were present within the classes. Additionally, lower response rates were noted for several components of the questionnaires: the open-ended responses for the administrative survey, as well as several of the close-ended

questions for the classroom climate survey. The sensitive nature of these questions may have impacted the number of teachers willing to respond; while the principal investigators of this study took stringent measures to ensure confidentiality, teachers without tenure may not have felt comfortable answering questions that pertained to their desire to remain in their positions as well as administrative support and oversight.

Further research should focus on teachers who serve students with autism in varied settings (e.g., general education, as well as varied self-contained classrooms) as well as explore the factors identified in this report in greater depth. While there are a number of studies that discuss challenges in training and supporting special education teachers, this study is unique in its particular emphasis on teachers of students with autism; as such, it is highly relevant to the current field of special education due to the increased rate of ASD in schools. Findings from this study could be used to address current district needs related to autism programming, as well as efficacy of instruction for students with autism. In addition, the results from this study could be used to inform district policy regarding autism programming, as well as enhance services and supports for teachers. Lastly, this paper should serve as a call to higher education to revise special education courses to reflect autism-specific instruction in order to ensure teachers have the appropriate categorical training to meet the needs of students in the field and provide autism specific training within administrative training programs.

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Teaching Basic First Aid Skills to Increase Inclusive Opportunities

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Abstract: Mastery of basic first aid (BFA) skills increases an individual's opportunity for inclusion. BFA skills empower individuals with intellectual disability to work in inclusive settings and live independently. This article identifies BFA skills that should be taught in the classroom prior to students transitioning from the K-12 school environment, as well as interventions that are classroom-friendly and easy for teachers to implement. A vignette is used to demonstrate the importance of teaching BFA skills and how teachers can create and utilize the interventions in their classrooms.

Miss Brown is a second-year high school teacher, certified in special education. This year she is working with students with intellectual disability. She knows that many of her students need repetition and opportunities to practice the skills they are learning in order to maintain the skills and generalize them across settings and people. She has partnered with a local business for some vocational skills training in the community. While on the job site, one of her students got a small cut on her hand from a piece of paper. Miss Brown brought the first aid kit to the student and told the student to bandage herself up. Miss Brown was surprised when the student didn't properly clean the cut, and then only partially bandaged the cut, leaving part of the cut exposed to the environment. Miss Brown assumed this was a generalization problem attributed to the novel environment, cleaned and bandaged the cut for the student, and returned the student to work.

Later that day, upon returning to the classroom, Miss Brown asked the same student to change the bandage and clean the cut. The student, again, did not clean the cut and applied the bandage improperly, leaving part of the cut exposed and covering the other part of the cut with the adhesive part of the bandage instead of the sterile gauze part. Miss Brown sent a note home that day inquiring with the student's guardian about the student's ability to complete this skill at home. The guardian responded that she had never given the student a chance to perform the skill. This got Miss Brown thinking – how many more of her students are lacking this vital life skill?

Educators strive to prepare students with intellectual disability (ID) to be independent, active community members. One way to ensure community inclusion is by teaching safety skills. Mastery of safety skills enables individuals to live as independent members of the community in their homes and their places of employment (Collins et al., 1992; Dixon et al., 2010; Ozkan, 2013). Even though mastery of safety skills is an acknowledged way to increase one's self-determination and independence (Mechling, 2008), the training of these skills is frequently overshadowed by other sets of skills that are used in the classroom daily, such as communication and academic skills (Dixon et al., 2010).

Agran and Krupp (2010) surveyed a group of parents to determine how important parents believed safety skill instruction to be for their children. Most parents in the sample (93%) believed safety skill instruction was very important for their children, but only 19% of the parents acknowledged that safety skill mastery had ever been a goal included in their child's individualized education program (IEP). The emphasis that is currently placed on standards-based curriculum may be preventing teachers from addressing safety skills in the classroom (Agran et al., 2012).

Safety skills are required for independent living, but many caregivers assume that if their teenager or adult child has not yet mastered these skills, it is too late to learn the new skill (Agran & Krupp, 2010). Researchers have repeatedly proven that this is not true, and have taught older children and adults with ID a myriad of safety skills, including seeking help when lost (Hoch et al., 2009; Purrezella & Mechling, 2013), social safety skills (Spivey & Mechling, 2016) cleaning and dressing a wound (Kearney et al., 2017), hands-only cardiopulmonary resuscitation (CPR) (Kearney, Brady et al., 2019), and CPR with automated external defibrillator (AED) (Kearney, Dukes et al., 2019).

One set of safety skills, basic first aid (BFA) skills, are necessary for independent living. Mastery of BFA skills increases inclusive opportunities in employment settings and community settings. BFA skills include recognizing an emergency, calling emergency services, protecting one from infection, treating wounds, and CPR (American Safety and Health Institute, 2016).

Why Teach Basic First Aid Skills
Mastery of BFA skills are necessary for individuals to live and work independently in inclusive settings. BFA skills prepare individuals to respond to personal emergencies and injuries, which individuals with ID are at an increased risk of experiencing (White et al., 2018). Young adults who are not prepared to identify an emergency and contact emergency services will have limited living options available to them upon exiting high school. First aid training or certification can make an applicant stand out when applying for a job. Young adults who can identify items in a first aid kit and clean and bandage a wound have a skill that is valued by employers (Christopher, 2017). Employees who know how to help in the event of an emergency provide a direct benefit to an employment setting, creating a culture of teamwork and support, which can be important aspects in a successful work environment (Woodin, 2016).

BFA skills at home
The Individuals with Disabilities Education Act (2004) requires that education focuses on providing inclusive educational opportunities for persons with disabilities. As students with ID prepare to transition to adult life in a postsecondary or employment setting, educators must help these individuals prepare to live in a supervised, semi-independent, or independent living arrangement. Instruction in BFA skills may help individuals live more independently (Mechling, 2008). In addition, mastery of BFA skills could save the life of a parent, caregiver, friend, or other member of the community as millions of nonfatal injuries occur in the home each year.

Basic first aid skills that are needed in a home setting include making an emergency phone call, identification and reporting of an illness or injury, treatment of minor cuts, treatment of unintentional poisoning, insect bites, minor burns, sun burns, and choking (Mechling, 2008). The Center for Disease Control and Prevention (CDC) estimates that

injuries from unintended falls are the number one cause of injury for almost every age group with over 8 million people being treated in emergency rooms for injuries from this type of accident in 2017.

Additionally, while the goal of education is to make individuals as independent as possible, 900,000 adults with ID live with their aging parents (Braddock et al., 2015). Individuals with ID who live with their aging parents need to be prepared to assist in an emergency. According to the Home Safety Council (n.d.) "older adults are twice as likely to suffer injuries or lose their lives in fires or falls than the population-at-large". The CDC estimated that approximately 600,000 individuals over the age of 55 were treated for cuts, bites, or stings in the emergency room in 2017. These statistics make BFA skills essential for the individual with ID as well as for the aging parent(s).

BFA skills in the workplace
Students with ID who are interested in working with other people, particularly children or the elderly, will increase their opportunities for an inclusive community work site by mastering BFA skills. All individuals are entitled to a safe and healthy work environment that is reasonably free of occupational hazards (Occupational Safety and Health Administration [OSHA], 2018). OSHA (2018) requires employers to provide first aid kits at all worksites. Approved first aid kits must contain gauze, bandages, wound-cleaning agent, gloves, resuscitation equipment, and more (OSHA, 2018). The Bureau of Labor Statistics reported approximately 2.8 million nonfatal workplace injuries and illnesses in 2017 (United States Department of Labor, 2018). According to the Health and Safety Institute (2017), there are approximately 10,000 sudden cardiac arrest incidents that occur in the workplace each year. Given the amount

of injury that occurs every year on a work site, employers desire employees who have a working knowledge of BFA skills. An individual who can accurately perform BFA skills is desirable to an employer. These skills keep both themselves and other people on the worksite safe, increasing the likelihood of employment in an inclusive environment within the individual's community.

How to Teach Basic First Aid Skills
Step 1: Determine Which Skills Your Student Needs
Miss Brown sent an email out to the other parents and found that many families were unsure of how well their children could perform BFA skills. Miss Brown started reviewing student Individualized Education Programs to determine what long-term independent living and employment goals were for her students. She realized that many of her students were working towards employment in some capacity. Miss Brown decided to start focusing on just a few necessary skills – identifying an emergency, contacting emergency services, and cleaning and dressing a wound. She decided to focus on these skills first since they are important safety skills in any setting her students may find themselves in, whether it be in the community, school, work, or home.

The first thing teachers should do is determine what BFA skills may be needed by each individual student. Reviewing Individualized Education Programs (IEPs) will provide teachers with information regarding education and training, independent living, and employment goals for transition-aged students. Once the teacher has familiarized her- or himself with long-term student goals, the next step would be to conduct a needs assessment. The teacher can ask the student who they should call during an emergency or how to put a

Table 1

BFA Skills Appropriate for Transition-Aged Students

Identifying an emergency and contacting emergency services
Protecting self from infection and limiting spread of infection
Cleaning and dressing a wound
Caring for insect stings and bites
Icing and heating sprains and strains
Administering hands-only CPR
Performing the Heimlich Maneuver
Treating minor burns

bandage on a wound, and much like Miss Brown in the vignette, he or she may be surprised by the student's lack of fluency with BFA skills. See Table 1 for suggested skills students should know prior to exiting high school.

Step 2: Choose a Research-Based Intervention

Now that she had identified what she wanted to teach, she needed to figure out how she wanted to teach it. She searched through the literature and determined literacy based behavioral interventions (LBBI) may work well with her students – there were studies using LBBIs to teach learners like her students all kinds of skills. Some of the studies even had peers reading the LBBIs with students, and she liked the idea of using a peer-mediated intervention. She had access to a camera to take the photographs to include in the LBBI, and she thought her students would be excited by the idea of reading a book with themselves as the main character to learn a new skill.

Once the teacher has determined what BFA skills are necessary for the student, the next step is to choose a research-based intervention that will be the best fit for the learner and the instructor. When considering what may be the best fit for both learner and instructor, think of things such as access to technology (video modeling), availability of other instructors (literacy based behavioral interventions [peer-mediated or adult-mediated]), and the amount of time the main instructor has available (simultaneous prompting, constant time delay, or task analysis).

Interventions proven effective for teaching BFA skills include individual training (Spooner et al., 1989), interactive story-telling (Marchand-Martella et al., 1991), backward chaining (Gast et al., 1992), peer teaching and tutoring formats (Marchand-Martella et al., 1992), small group instruction (Timko & Sainato, 1999), peer and self-video modeling (Ergenekon, 2012; Ozkan, 2013), literacy based behavioral interventions (Kearney et al., 2017), and simultaneous prompting (Kearney, Dukes et al., 2019). These studies used different instructional strategies to teach individuals with disabilities BFA skills, but these studies all incorporated behavioral practice of the skill for the students to achieve mastery. See Table 2 for literature supporting strategies to teach BFA skills.

Step 3: Create the Intervention

Miss Brown began writing out a task analysis to properly clean and bandage a minor wound (see Table 3 for task analysis of this skill)*. Next, she took photographs of each step in the process of cleaning and covering the wound. She knew photographs would help*

Table 2

Strategies to Teach BFA Skills

BFA Skill	Teaching Strategy	Supporting Research
Treatment of cut, abrasion, minor burn	Video modeling	Ergenekon (2012)
Treatment of cut, minor burn, insect bite	Orientation lecture and 5-second constant time delay	Gast, Winterling, Wolery, & Farmer (1992)
Treating abrasion, minor burn, and cut	Peer teaching program	Marchand-Martella, Martella, Agran, Salzberg, Young, & Morgan (1992)
Clean and dress a wound	Literacy based behavioral intervention	Kearney, Brady, Hall, & Honsberger, (2017)
Call 911, clean and dress minor wound, treat choking	Group discussion and individual training	Spooner, Stem, & Test (1989)
Hands-only CPR	Total task presentation with error corrections	Kearney, Brady, Dukes, & Downey, (2019)
CPR with resuscitation breathing and AED	Modeling, task analysis, and simultaneous prompting	Kearney, Dukes, Brady, Hall Pistorio, Duffy, & Bucholz (2019)

her students master each step in the task analysis without overly relying on prompts from her. Miss Brown included written text with the photographs to explain each step. She made sure to individualize the language in each LBBI to the level of each student who needed to learn this skill. For the students who had difficulty reading, she put their story into a PowerPoint and narrated each step. The students could then use a tablet to play the PowerPoint for themselves. For other students, she simply printed the pages and created a storybook for them to read. See Table 4 for a sample LBBI.

Once the teacher has determined which intervention will be the most effective given the learner and the availability of the instructor, it's time to create! Many teachers have access to smart phones and tablets that can be used to take and share photographs or videos. Regardless of which intervention is chosen, teachers need to make sure they individualize the intervention for each learner.

Step 4: Teach to Mastery
Miss Brown knew for true mastery she needed her students to practice the new skills in more places than just her classroom. She "trained loosely", recruiting another teacher to provide support during some training sessions to the students. Students practiced at school and at the job site. After students performed the skill with 100% accuracy, Miss Brown made sure to probe every few months in order to help the students maintain the BFA skills.

Once an intervention has been chosen and the skill has been taught, it's time for the final step: Practice, practice, practice! Students require repetition and practice to reach mastery. Teachers also need to program for generalization and maintenance of the skill - It's not enough to teach and hope! Students

Table 3
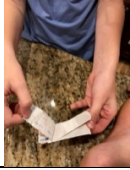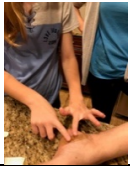
Task Analysis of Cleaning and Bandaging a Minor Wound

Steps for Cleaning and Bandaging a Minor Wound
1. Wash hands with soap and water.
2. Wash wound with soap and water.
3. Dry wound with clean towel.
4. Get bandage large enough for wound.
5. Apply antibiotic cream to wound with a cotton swab.
6. Open bandage.
7. Place on skin covering the entire wound.
8. Press down lightly on bandage to make sure it sticks to skin.
9. Throw all trash in the garbage can.
10. Wash hands with soap and water.

Table 4

Sample LBBI for Cleaning and Bandaging a Minor Wound

Page number	Text and illustrations
Title page	How to clean and bandage a minor wound
Page 1	Sometimes cuts or minor injuries happen. It is important to for Carden to know what to do if someone has a cut. Step one is for Carden to wash her hands before she touches the wound.
Page 2	Next, Carden should wash the wound with mild soap and water.
Page 3	Next, she should dry the wound with a clean towel.
Page 4	Next Carden should get a clean bandage big enough to put over the entire wound.
Page 5	Carden should use a cotton swab to apply a small dab of antibiotic cream to the wound. She should not use her finger.

Page 6	Carden will need to open the bandage and make sure not to touch the pad on the bandage.
Page 6	Once the bandage is open Carden will need to put it on the wound. She will need to make sure to cover the whole wound.
Page 7	Carden should press down lightly on the bandage to make sure it sticks.
Page 8	Carden throws all the trash in the garbage can and washes her hands again. She now knows how to clean and bandage a minor wound. She is ready to help herself, or her family, friends, or coworkers.

need to practice the skill across environments, people, and stimuli.

Final Thoughts

Mastery of BFA skills will increase inclusive living and employment opportunities for individuals with ID. These skills are needed to live independently and work in integrated employment settings. Teachers need to focus on teaching BFA skills to transition-aged students in order to ensure access to inclusive opportunities after they leave high school. Teachers need to identify what skills may be missing from the student's current repertoire, how they can best teach the skills, and how to program for skill fluency, generalization and maintenance.

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Social Validity of a School-Home Note Intervention for Students with Autism Spectrum Disorders: Independent Stakeholder Perspectives

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Abstract: High quality communication between school and home is reported to be highly valued by parents of children with autism spectrum disorders (ASD). However, they remain dissatisfied with school-home communication and limited empirical research has addressed this topic. One study that used a school-home note with parent-provided, home-based reinforcement to reduce child off-task behavior showed differential results for some students, but high social validity according to parent and teacher participants. In this study we evaluated the social validity of this school-home note intervention from the perspective of other parents of children with ASD—outside consumers who did participate directly in the intervention. Focus groups were conducted with 22 parents of children with ASD. Results showed high acceptability of this intervention related to: communication and data sharing, parent involvement, child motivation, and consistency between school and home. Participants also identified several limitations and suggestions for improving the school-home note. Implications for research and practice are discussed.

Decades of research have shown the importance of parent involvement at school to promote student outcomes such as academic achievement and graduation (Burke, 2012; Jeynes, 2005). Within special education, parents of children with disabilities have even greater, more specific rights to involvement in the special education process, as delineated through the Individuals with Disabilities Education Act (IDEA, 2004). Parents are expected to hold the school accountable and should actively participate in decision-making on behalf of the child (Burke, 2012).

Across different models of school involvement from general to special education, communication is consistently included as a central component. In the most influential and commonly used model of parent engagement (Walker & Hoover-Dempsey, 2008), Epstein (2001) describes six types of parent engagement; each type is considered to have the potential to exert considerable influence on student outcomes. One of these types, *communicating*, is defined as: effective forms of school-to-home and home-to-school exchange of information about school programs and children's progress. Similarly, in a commonly cited model of collaborative family-professional partnership developed specifically for families of children with disabilities, Blue-Banning and colleagues (2004) identified six themes, one of which included communication. According to Blue-Banning et al., indicators of quality communication include a high frequency of communication, listening, being honest, and sharing resources. Across both models, bi-directional school-home communication is considered important in building partnership between the schools and families of all students.

However, the importance of communication and building strong family-school partnership may be even more critical for parents of children with autism spectrum

disorders (ASD). By definition, children with ASD have deficits in social-communication, making it challenging for parents to rely on their children to communicate what happens at school (Azad et al., 2016). Parents of children with ASD themselves report school-home communication to be a highly valued method of collaboration (Tucker & Schwartz, 2013). In fact, quality of communication is positively correlated with outcomes such as parent satisfaction with child service provision (Whitaker, 2007). Despite the established importance of bi-directional communication for parents of children with ASD, these parents report being less satisfied with communication from school compared to parents of children with other disabilities and parents of children without disabilities (Zablotsky et al., 2012).

Although the identification of research-based practices for developing high quality communication should be a priority, the empirical research on this topic is limited (Goldman et al., 2019). Tucker and Schwartz (2013) provided some recommended practices for teachers of children with ASD, such as: using formal and informal means of communication, creating a formal communication plan, and using the parent's preferred method to communicate. While limited empirical research has evaluated these recommendations for children with ASD and their families, there is evidence for the effectiveness of interventions that use school-home notes for other similar populations of students with disabilities (Vannest et al., 2010).

In the first experimental study to evaluate the use of school-home notes for school-age students with ASD, Goldman and colleagues (2019) used school-home notes with home-based contingent reinforcement to decrease the off-task school behavior of four students with ASD. While students earned a reward if they met a certain behavioral criterion at school, this reward was provided by parents at home later that day. This information-- and the corresponding data-- were communicated to parents daily using a school-home note (see Figure 1 for an example). School-home notes were individualized, but all included the following components: (a) target behavior and goal; (b) space for brief teacher comments; (c) an indication of how often the behavior occurred, according to teacher-collected direct observational data from a target activity; (d) whether the criterion was met; (e) a 5-item parent fidelity checklist; and (f) space for parents to write a note to the school.

Findings showed the intervention to be differentially effective for some participants, precluding the demonstration of a functional relation (Goldman et al., 2019). However, social validity results were promising, with all eight participating teachers and parents rating the acceptability of the intervention and its outcomes highly. Parents and teachers described improvements in partnership and communication as a result of the intervention; more specifically, they reported positive perceptions of the structured, focused, and consistent nature of communication using the school-home note.

Social validity has long been considered an essential component of applied behavior analysis (ABA). Researchers and practitioners must address socially significant behaviors (Baer et al., 1968) with "social validation" of intervention goals, procedures, and effects (Wolf, 1978). In updated guidelines for identifying evidence-based practices (EBP) in special education, Horner and colleagues (2005) included social validity as one of seven main quality indicators for single-subject research. A focus on social validity is thus necessary for the important task of establishing EPBs in

Figure 1
Sample School-Home Note

JOHN'S NOTE HOME

Date: _____   Activity: Math

During Math I need to have:

1. Eyes on teacher
2. Calm body
3. Follow directions

If I earn _____ points, when I get home from school I will get to play on the iPad.

- -

Today I earned ___ points

1	2	3	4	5	6	7	8	9	10

Did I meet my goal today?   YES   NO

Note to parent:

Parent Checklist

Please review this behavior sheet with your child and initial the following items as you complete them:	Initial when completed:	Parent notes:
1. Got school-home note from child's backpack within 1 hour of arriving at home		
2. Reviewed school-home note with child		
3. Provided praise and the reinforcer if child earned it, or remained neutral if he did not		
4. Did not give access to the reward if it was not earned based on school behavior		
5. Put form back in child's backpack.		

special education and is also considered particularly important for research on interventions specifically for students with ASD (Dingfelder & Mandell, 2011).

While ABA and single-subject research typically rely on quantitative measurement to maximize objectivity, there is a push for the use of qualitative methodology, such as interviews and focus groups, to understand the social validity of intervention procedures and outcomes and contribute to the establishment of EBPs (Kozleski, 2017). Typical social validity surveys and direct, face-to-face interviews may inflate participant satisfaction (Machalicek et al., 2007). Additionally, traditional social validity measures typically only consider the perspectives of those directly involved in a study. While these participant perspectives are important in understanding the acceptability of the intervention, it is valuable to also recruit the perceptions of outside "consumers" not directly involved in implementation of the intervention (Machalicek et al., 2007). These individuals may be able to more freely provide their honest opinion and can promote generalizability by allowing larger and more varied groups of people to contribute their perceptions. The representation of diverse participants in literature establishing EBPs for students with ASD is currently extremely limited, further highlighting the need to incorporate more diverse perspectives (West et al., 2016). Therefore, in this study, we explored the perceptions of parents of children with ASD who were outside consumers (i.e., did not participate directly in the intervention) of the social validity of the school-home communication intervention used by Goldman and colleagues (2019).

Methods
Sample

Participants in this study included 22 parents of school-age students with ASD. On average, parents were 38 years old and their child with ASD was 6 years old (range: 3-18 years). Participants included mothers (59%) and fathers (41%), and were distributed across racial and ethnic groups. Overall, they were 50% White, 25% African American, 20% Hispanic, and 5% Asian. Two Spanish-speaking Latino parents used a translator to participate. Across participants, the median level of education was completion of some college or an Associate's degree.

Procedures

After receiving approval from the university Institutional Review Board, recruitment flyers and emails were sent to local schools and community disability organizations to be disseminated. This study used purposive sampling; any caregivers of school-age children with ASD were invited to participate. A total of three focus groups were conducted, with a mean of eight participants per group.

At the start of each focus group, participants provided their consent and completed a brief demographic form. Before beginning, each participant chose a pseudonym that they used throughout the focus group to maintain their anonymity. They then participated in focus groups led by the authors using semi-structured scripts. During the focus group, participants were shown samples of school-home notes (see Figure 1) that corresponded with scripted questions. For example, the facilitator described the school-home note intervention, passed around sample school-home notes, and asked, "Is this something you might want your child's teacher to use? Why or why not?"

Each focus group was audio-recorded and lasted approximately one hour; topics beyond social validity were addressed during this

time. In addition to audio-recording, graduate research assistants took detailed field notes for each focus group, indicating who was speaking when and the general topic of their comment. The focus group facilitators also recorded less detailed notes and impressions during and immediately after focus group completion.

Data Analysis

Focus group recordings were transcribed and independently coded line-by-line by both authors using constant comparison (Strauss & Corbin, 1998). The authors then compared their codes, discussed commonalities and differences and re-analyzed the data independently to allow any new codes to emerge. After multiple iterations of this constant comparative coding process, the authors agreed upon the final themes and sub-themes presented below.

Trustworthiness

To ensure the quality and credibility of this study, we followed the guidelines for qualitative research in special education established by Brantlinger and colleagues (2005). Participants purposefully included diverse representatives of the population of interest (i.e., caregivers of school-age children with ASD who did not participate in the original study by Goldman et al. [2019]). Semi-structured focus group scripts were carefully designed to be clear, open-ended, appropriate for exploring specific questions about social validity, and consistent from group to group (with different facilitators). Both facilitators reflected on their positionality as doctoral students and special educators before conducting focus groups and while analyzing focus group transcripts. These facilitators were of different ethnicities (Latinx and White) and had experiences working with individuals with ASD of different ages (elementary versus transition-age). To further ensure Trustworthiness, data

sources such as informal and formal field-notes recorded by multiple observers were triangulated with audio-recordings and transcripts, utilizing evidence from multiple and varied sources. Finally, external auditors reviewed findings and confirmed that inferences were logical based on their varied experience (Brantlinger et al., 2005).

Results
Acceptability of Intervention

Across all focus groups, participants agreed that this school-home communication intervention and its procedures were acceptable. Positive findings related to four main areas: (1) consistent communication, (2) parent involvement, (3) student motivation, and (4) consistency across settings. Participants also made connections to other interventions and practices currently used by their child at home or school.

Consistent Communication and Data Sharing

Parents appreciated that the school-home notes could be used to collect and share data, rather than having to rely on subjective or anecdotal information about the child's behavior and progress, which was the norm. Sadie, the mother of an 18-year-old son explained this by agreeing with another parent's earlier comment about the importance of documentation. Referencing her son's teachers, she shared:

> It's for documentation too, like she talked about. They can document. It's a great way to help them see what they're doing over time. I wish I had all that when my son was that small because all we got was the teacher's word, and that was it. But this way I can see the pattern, and we can work on a pattern and focus on that. So this is great.

Parents across the other focus groups agreed, with one mother noting that receiving the school-home note would provide her with

"something tangible that occurred during the school day" and another agreeing that "it would be a good tool."

Parents also liked this documentation because data-sharing was built in to the intervention to promote communication on a daily basis. Instead of having to wait for more formal opportunities for communication and progress monitoring, such as meetings, this intervention provided frequent opportunities for consistent, informal exchange of information. Jeff, the father of a preschooler highlighted the benefits of consistent communication and data sharing: "…instead of just having to wait for that IEP, whenever that comes. Because that's most frustrating. Having to figure out that something is not progressing way after the fact…" Thus, parents appreciated that the school-home note promoted objective data collection and documentation of progress that could be shared consistently with families.

Parent Involvement
Parents also liked that they would be explicitly involved in this intervention in the role of providing home-based reinforcement for the child's behavior at school. To ensure fidelity, a parent checklist was included on the school-home note used by Goldman et al. (2019; see Figure 1). This checklist was generated by the authors and reminded parents to check the note each day and provide reinforcement only if it was earned. Andy, a mother with a background in special education, noticed this checklist on the sample school-home note and shared: "I like the fact that it has a parent checklist. That's one thing I wish they would have-- also that responsibility for the parent." Similarly, another parent shared that this would "make it easier for us to hold her accountable for her behavior." Parents consistently wanted to be involved in this intervention and take on responsibility to help improve the child's

behavior at school. When parents in a different focus group were asked if they would like their child's teacher to use a school-home note, one parent concisely explained, "Absolutely. Again, it's just about being more involved." Therefore, across groups, participants found the inclusion of parents in this intervention to be highly acceptable and desirable.

Student Motivation
Relatedly, parents liked and appreciated the value of being able to provide the child with a reward at home based on school behavior. Through a translator, Dolores shared her perspective: "That motivates the child a lot because he'll get all excited if he had a really good day and he'll come home to show her." Additionally, home-based rewards can be more motivating because the child may be able to access toys or other tangibles and activities that they may not have at school. Sadie stated:

> It was something that they could connect with and identify with that reminded them that, if I get the reward, it's associated with something that I'm interested in. And it motivates me to want to go do that. Yeah, that's neat.

Overall, parents found the home-based, parent-provided reward component of the intervention to be highly acceptable and thought it was likely to be effective in motivating students with ASD.

Consistency between Home and School
Parents also appreciated that the school-home note intervention and the information shared through it could help promote the consistency between settings and providers that is so important for children with ASD. Jeff's wife, Michaela, stated that:

> I do like the idea of being able to carry home the idea of, 'Here's your follow through reward for whatever you've been doing all week.' It's been hard to keep the

two-- for him, it's just so different and separate-- so to keep it one continuous form of discipline and communication for him would be awesome.

Building on this idea, Jeff explained that it was challenging for him to know what to do with his child at home because Michaela was the one who was typically present. He was aware that his son was working on specific skills at school, such as handwriting, but did not know how to translate these activities to the home setting because this information was not shared by his son's school. Jeff agreed that, "something like that seems excellent" to improve consistency between home and school. This sentiment was echoed by another father, David, who noted that the school-home note and corresponding documentation "…gives us as parents something, 'Oh great, you met your goal. You worked on +1's today. Let's review them'." Parents therefore thought this intervention would help them to "reinforce" skills the child was working on at school at home.

Similarity to Current Practices

In addition to high social validity in terms of general acceptability, participants indicated their approval by making connections between the school-home note and similar systems they liked and used with their own child. Michaela made a connection to a similar detailed note she received from her son's new teacher in preparation for his transition to a new classroom:

> I was really thankful because he sent home a very thorough thing like this. I was so glad, because it had what he ate for lunch, what he did during recess… It would say what activity he chose, and then if he had any behavioral issues or something he needed to work on. And I was like, 'This is what I needed!' It was just super helpful.

Likewise, Andy, mother to a daughter in 3rd grade, shared that "we have something similar to that, but it didn't have the parent response." Although similar, this school-home note intervention seemed to provide greater opportunity for bi-directional communication beyond the typical one-way information sharing from school to home that more often occurs with traditional school-home notes.

Parents also made connections to other behavior management systems with contingent rewards used by their children at home and school, such as token boards and color charts. Some focus group participants had children who attended, or had previously attended, the same school and therefore had exposure to similar class-wide behavior management systems (e.g., color charts). Jen, David's wife, made a connection between rules listed on the school-home note and specific rules their son used at therapy and home. She stated that, although they had "rules like that," she liked this format better: "I like how it's written up. I really like that." Although David agreed that they used similar rules, he noted that, "we don't do the communication- like the back and forth with the teacher." Therefore, parents made connections to other behavioral practices used with their children to highlight the acceptability of the components and procedures of the school-home note intervention. However, other behavior management systems mentioned did not typically include a method to promote bi-directional communication.

Limitations and Suggestions for Improvement

Despite these positive perceptions, parents did share some concerns and suggestions for making the intervention even more acceptable to them.

Limitations

Parents identified two main limitations of the school-home note intervention. First, they had concerns about the delay to reinforcement necessitated by home-based contingent reinforcement for school-based behavior. Particularly for younger students and children with limited communication, parents were unsure if this intervention would be effective. Jen expressed uncertainty about the effectiveness of this intervention for younger children even though she felt it would work for her 3rd grade son: "The only thing I wonder about the younger kids is, they kind of want instant gratification. So with the preschoolers, I don't know." A parent of a younger child agreed with this sentiment: "I think it's a great idea eventually. It wouldn't work great right now. But eventually, yeah." Similarly, participants expressed concern about the effectiveness of this intervention for students with limited receptive and expressive language and communication skills. Gerald, father to a 3-year-old son who had just begun to receive school services expressed his skepticism:

> I don't really know how much it would help him. He's three and he's autistic and stuff… like I said, he don't really talk. He just mumbles. He'll let you know what he wants. But he just mumbles. He's working on his… you know, it's a process, he's working on it. So I don't know if that's really gonna help him.

Another concern related to the teacher's role in this intervention. Some participants questioned whether teachers could accurately collect data and if they would honestly share it. Deena, mother to a minimally verbal 5-year-old son, was skeptical. She explained

> What I get a kick out of is, when I look at a parent checklist like this and it says the same thing every day. Every day! And you're like, how? You're talking about [son's name], right? You're gonna tell me

he didn't get upset when you told him no goldfish crackers? You're full of it.

Other parents agreed with this sentiment, but were more concerned with overwhelming teachers with too much data collection and paperwork. Jeff explained the need to design a well-structured, efficient communication form that meets the needs of all involved. He stated:

> I've thought about that a lot over the past year… I think it's rare that a teacher straight up just doesn't care. It's that they're overwhelmed, they have a ton going on. Something that is either poorly designed or is an overburden on top of their current workload. How do you design something so that it's easy for them to communicate something? How do you communicate a whole day?

Overall, parents across focus groups agreed with this goal of simplicity and efficiency, and that a complex, labor-intensive school-home communication system would be ineffective. Thus, two main concerns were identified by parents, relating to delayed reinforcement and teacher responsibility for data collection.

Suggestions for Improvement

Building on the school-home note intervention that was described to parents, focus group participants also made suggestions for improvement and asked clarifying questions that fell under two main categories. First, parents highlighted that the note and intervention components should be tailored to the specific needs and abilities of each individual student. For those students who were able, parents suggested involving them in the intervention as much as possible. For example, Jen thought her son who was in 3rd grade would be motivated by being involved in writing his goal or crossing off points as he earned them. She explained, "Because he's old enough to write out his own goal. Because that would get him a little

bit more involved… So he would enjoy that." Relatedly, David suggested that the note should include the child's specific target activity and goal to give the parent more information and help promote carryover from school to home.

The other main theme related to keeping the focus of the school-home note positive. Sam explained how she takes the initiative to make sure communication from the school about her daughter-- who is minimally verbal-- focuses on the positive. She shared: "So I make my home sheets positive…. So I changed it, I changed it to be like the child psychologist told me. You concentrate on the positive and reward her for the positive." Sam felt that any school-home note should maintain this positive focus. Another mother, Linda, inquired about the ability for the student to gain and lose points, making another comparison to her child's current system. She explained, "They can recede and get better throughout the day. And sometimes that information about how they can recede is just as important, because then you know that they really did slip past it, not that they pushed forward." Thus, parents wanted to ensure that the school-home note had a positive focus, but also presented a full picture of the child's behavior over the course of the day.

Discussion

Although building strong family-school partnership and high-quality bi-directional communication should be a priority for schools and families of students with ASD (Tucker & Schwartz, 2013), empirical research on this topic is limited. As part of the process of establishing a research-base for communication-based interventions, it is important to determine the acceptability for key stakeholders (i.e., social validity). In this study, we examined the perceptions of outside stakeholders regarding the acceptability of a home-school communication intervention for children with ASD. We identified three main findings regarding the social validity of this intervention according to the perspectives of independent consumers who were parents of children with ASD but did not participate directly in the intervention. These findings related to: (1) intervention acceptability, (2) suggestions for improvement, and (3) areas of concern.

Intervention Acceptability
First, parents across focus groups consistently found this home-school communication intervention with parent-provided contingent reinforcement to be highly acceptable. Many made connections to effective, research-based behavior management strategies (e.g., token boards) currently used with their children. They also stated that they themselves would be interested in using a similar school-home note intervention with their children with ASD.

Additionally, although focus group participants did not participate in the prior study to establish an evidence-base for this practice (Goldman et al., 2019), they independently identified key components of this intervention. The purpose of a school-home note intervention is to increase parent-school communication and create a partnership between school and home; the home-school note can act as an intervention, progress monitoring tool, and system of communication all in one (Vannest et al., 2010). Without prompting, parents touched upon these characteristics in their evaluation of the intervention. First, participants appreciated that a school-home note intervention like this would support them in more frequent, consistent communication with the school to share data and monitor progress. It is well established that data

should be collected and shared consistently to monitor progress and inform educational decision-making for students with ASD (Witmer et al., 2015) but, in practice, parents are often unhappy with the extent to which this occurs (Zablotsky et al., 2012).

Participants also highlighted the parent-involvement component as a strength, indicating a desire to be involved in managing their child's behavior. By providing the reward at home, parents could give access to a tangible that may be more reinforcing than what was available to the child at school. In this way, parents felt empowered to contribute to the effectiveness of this intervention. Also related to parent involvement, parents cited consistency across settings as an important factor for the high social validity of this practice. Parents reported a desire to be more involved in generalizing skills from school to home, which is particularly important for students with ASD who often experience challenges with generalization across people and settings (Church et al., 2015). Therefore, parents' high ratings of social validity specifically related to the benefits of: consistent communication and progress monitoring, parent involvement in providing home-based reinforcement and increasing student motivation, and consistency across settings.

Suggestions for Improvement
Despite the overwhelmingly positive feedback, participants also shared some suggestions for improving the school-home note intervention and reflected on concerns regarding its effectiveness for certain student populations. Overall, respondents thought that the more individualized the school-home note and intervention, the better. This is consistent with general best-practice in special education and the requirements of IDEA (2004) to provide students with

disabilities with individualized services and supports. Also consistent with best practices in ABA and positive behavior supports (PBS), parents highlighted the benefits of focusing on the positive. Although not explicitly emphasized during focus groups, these parent suggestions align with the flexible design of the school-home note intervention. All school-home notes shared common components specified by Kelley (1990), but were otherwise individualized to meet the child's level and interests; the intervention setting, target activity, behavioral expectations, and reward also varied across participants (see Goldman et al., 2019 for more details). However, across all participants, the behaviors were framed positively, with students earning points for appropriate behavior instead of losing points for engaging in challenging behavior. Parents and teachers were also coached to focus on the positive and not provide too much attention when students engaged in challenging behavior or did not meet their goal. Thus, parent suggestions regarding the acceptability of this intervention nicely match the flexibility of school-home note interventions (Vannest et al., 2010).

Areas of Concern
Based on their personal experience, parent participants also identified two main concerns that might limit the effectiveness of this intervention. The first of these concerns related to student characteristics: young students and those with significant communication deficits may not benefit from this type of intervention. In fact, these concerns identified by parents aligned with results from the study that experimentally evaluated this practice (Goldman et al., 2019). Although age did not seem to play a role, this intervention was differentially effective for the two participants who were on the "less severe" end of the autism spectrum (American Psychiatric Association,

2013) with fewer support needs. Thus, this parent concern may be validated by future research. Parents were also concerned about teachers' ability to implement this intervention given the well-established demands on their time (Witmer et al., 2015).

These findings regarding social validity are particularly valuable because they involve the perceptions of participants who have children with ASD, but who did not participate in the intervention. These outside consumers were able to be honest about the fit of the intervention to their needs and values (Dingfelder & Mandell, 2007). Focus group participants provided responses that highlighted the overall acceptability of this intervention, but also included valid concerns, which happen to be supported by the literature (Goldman et al., 2019; Vannest et al., 2010). In determining the acceptability-- or social validity— of an intervention, some would consider the primary goal to be identifying what consumers dislike about a treatment (Machalicek et al., 2007). Through this lens, participants provided thoughtful suggestions to improve an already acceptable intervention for future use.

Implications for Research and Practice
These findings have several implications for research and practice, particularly related to the establishment of EBPs in special education. First, findings from this study show the importance of collecting social validity data beyond direct study participants (Machalicek et al., 2007). Although both Goldman et al.'s (2019) study participants and this study's focus group participants reported high social validity overall, they focused on different facets of the intervention procedures and outcomes and represent different perspectives. While it is important to attend to social validity in establishing EBPs for students with ASD in general (Callahan et al., 2008), in future research,

measurement should be extended beyond typical quantitative questionnaires assessing the perspectives of typical participants (i.e., those who participate directly in the intervention; Kozleski, 2017).

Further, the literature on EBPs for students with ASD in particular lacks the perspectives of diverse participants (West et al., 2016), such as those presented in this study. For example, research on families of children with ASD typically focuses on the mother's perspective, with those of fathers overlooked (Potter, 2017). However, the fathers who participated in these focus groups contributed valuable, insightful perspectives that should be considered. In the original study by Goldman and colleagues (2019), only one father participated in social validity interviews, but he was not actively involved in implementing the home-based component of the intervention. Beyond role, other "contextual factors," such as race, ethnicity, and socio-economic status, should also be considered in determining "what works" (West et al., 2016). In the school context, families of students with disabilities that are racially, ethnically, and linguistically diverse experience differences in social-cultural capital and face unique systemic barriers to involvement (Harry, 2008). These differences, if not addressed, may lead to inadequate cultural fit between interventions and families. Therefore, additional research is needed that considers social validity and other factors related to EBPs from the perspectives of all who are involved.

Particularly for home-school communication interventions, additional high-quality research is still needed to establish an evidence-base for this practice. Some of the findings from this study may be used to inform the design of future studies. For example, results from Goldman et al. (2019), showed that the intervention was

differentially effective for certain participants. Findings from this study support those results and provide guidance for identifying more specific inclusion and exclusion criteria that can guide future research. To determine if participants met inclusion criteria, Goldman and colleagues relied on parent and teacher perceptions of whether the student's receptive language level was sufficient to understand the school-home note and home-based contingency, and whether they could comprehend and respond to delayed reinforcement. Findings from this study indicate that more formal measures of child communication and functioning may be necessary to identify participants who will benefit most from this intervention.

Although additional research is needed to establish an evidence-base for school-home notes, some of our findings can be used to inform practice. Parents in this study, whose children attended various schools across districts, reported the use of similar home-notes by their child's teacher or the use of other research-based behavior management strategies, such as establishing clear, specific rules or using token systems. Teachers should be encouraged to continue to use these practices, particularly in coordination with families. But, our findings show that families are aware of the demands on teachers and do not expect or desire burdensome forms of communication and data-sharing. The focus should be on developing and using efficient systems for ongoing progress monitoring and frequent bi-directional communication between teachers and families of students with ASD.

Limitations

This study also has some limitations that should be considered. First, although the participants represent a relatively diverse group of parents in terms of role, race/ethnicity, and education, all lived in one region of a southeastern state. This may limit the generalizability of our findings to families whose children attend school in other districts and states with different service-delivery systems and procedures. Relatedly, although participants were parents of children who represented the full school-age range (i.e., ages 3-18), few had older children (e.g., high-school age). However, social validity findings related to intervention effectiveness and child age still emerged, so this likely did not limit our findings. Additionally, although we achieved data saturation, indicated by redundancy of themes across groups, it is possible that novel perspectives would have emerged from additional focus groups and a larger sample.

Conclusion

In conclusion, findings from this study provide additional support for the social validity of a school-home note intervention from outside consumers. Parents who were not directly involved in implementing the intervention perceived specific benefits relating to communication, progress monitoring, parent involvement, and consistency across settings. These strengths, in addition to limitations identified during focus groups, should be used to inform future research related to establishing an evidence-base for the use of school-home notes for students with ASD.

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Analysis of Personal Projects of Mothers and Fathers Having a Child with an Intellectual Disability

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Abstract: The birth of a child with an intellectual disability (ID) is a significant event that leads to questioning projects and reviewing life priorities likely to contribute to psychological distress. Well-being is intimately related to the realization of intrinsically motivated projects driven by internal rewards and satisfying for the individuals. Study aims are to repertory the personal projects of parents having a child with an ID and to identify their underlying motivations, beliefs about them, perceived support in the achievement as well as affects they arouse. It also explores differences between mothers and fathers as well as the gender and age of children and family types. Recruited in rehabilitation centers for people with an ID, 47 mothers and 36 fathers completed the personal project analysis grid (Little, 1983) during a semi-structured interview. Generally, the projects' content is not directly related to resources and services to meet specific needs of their child. Parenting and work projects are in harmony with their values, but health-related projects are the first priorities, especially for single parents. Mothers manifest more self-determination in carrying out their projects, while fathers would feel more ashamed, guilty or anxious if certain projects were not realized. Parents of a girl are generally more positive about their projects and they feel more competent and confident to realize them when the child is older. These results lead to a better understanding of significant and intrinsic projects of parents. They may contribute to targeting the favorable conditions to support their achievement and hopefully to promote their self-actualization and well-being.

Being a parent of a child with an intellectual disability (ID) has its rewards and challenges (Burke et al., 2019). However, most research has focused on the challenges faced by these parents (Boyd et al., 2019) by adopting a paradigm of stress and coping (Beighton & Wills, 2019). Many studies have shown that they report higher levels of stress, distress, depressive manifestations and anxiety (Burke et al., 2019; Scherer et al., 2019) than those having a child with a typical development. The stress and distress of the parents of a child with an ID are usually explained by the characteristics of the child, as gender, age, and behavioral problems (Burke et al., 2019; Marquis et al., 2019; Neece & Chan, 2017). However, the parenting experience and the sources of stress of mothers and fathers substantially differ (Boyd et al., 2019; Neece & Chan, 2017) given that mothers are the principal caregivers of the child (Marsh et al., 2020) or the sole caregiver when they are single parents (Cless & Stephenson, 2018).

More recently, research on the positive effects that a child with an ID can bring to

parents or family has been discussed. However, no consensual definition emerges about the positive aspects of being a parent of a child with an ID (see review Beighton & Wills, 2019). These aspects are often described as situations where the parent views the care they provide to their child as either a source of gratification, enrichment in their life or intrapersonal changes (Strecker et al., 2014). Similarly, no single conceptual model that addresses these aspects is available (Beighton & Wills, 2019). On the one hand, some of them conceive that cognitive adjustment would allow parents to ascribe meaning to their experiences, i.e. to adapt or grow after being confronted with adversity. On the other hand, few studies have established a link between the positive aspects experienced by parents of a child with an ID and the different conceptualizations of subjective well-being in the fields of positive psychology. Even if no consensus emerges for the definition of subjective well-being, most conceptions of it recognize that it is related to success in one's personal goals or projects (Bedford-Petersen et al., 2019).

As stated by Little and Coulombe (2015), personal projects represent a set of meaningful and intentional actions put forward by an individual that reflects both his personality and the various characteristics (e.g., expectations, constraints, opportunities) of his social environment. According to the Theory of Self-Determination (Deci & Ryan, 1985), intrinsic motivation involves carrying out a project for what it is and the pleasure it provides in the absence of material rewards and constraints. This would be associated with various positive consequences for the individual: engagement, persistence, satisfaction, well-being, happiness, etc. (e.g. Manganelli et al., 2018). Similarly, according to Eccles (2005), the value placed on a project (or its meaning for the individual) is a strong predictor of

success. This value may arise from the intrinsic nature of the project, the importance of its success for identity, its usefulness related to future objectives and its cost compared to other projects. If the pursuit of a project seems too demanding compared to the others, it could lead the individual to withdrawal, due to the continuous reassessment of the involvement toward his personal goals (Heckhausen et al., 2010).

In sum, the birth of a child with an ID is a significant event that leads to questioning life projects and reviewing priorities. Well-being would be promoted by intrinsic, meaningful, easy-to-manage projects, as well as compatibility with other projects, and arousing positive emotions (Little & Coulombe, 2015; Sheldon & Elliot, 1999). Several studies have found correlations between these various dimensions of personal projects and well-being (Bedford-Petersen et al., 2019; Little & Coulombe, 2015). Despite the interest to understand the personal projects of parents of children with an ID to ameliorate support or improve services, no reviewed study has addressed such perspective by deepening the meaning of their individual and common goals. The analysis of personal projects is therefore a promising avenue to study the subjective well-being of parents of a child with an ID. It is an ecological analysis grid that may counterpart the limit of traditional self-reported questionnaires which do not take into account the contextual elements. This approach was also used in clinical interventions.

The aims of this research are to repertory the personal projects of parents of a child with an ID and to identify the underlying motivations, beliefs about them, perceived support in their achievement as well as the affects they arouse. It also explores differences between mothers and fathers as

well as the gender and age of children with an ID and family types.

Method

Procedure

Ethic approval for the project was obtained from both Ethics Committee of Integrated University Health and Social Services Centres of Mauricie–Centre-du-Québec and of Université du Québec à Montréal. This research was conducted in three regions of Quebec (Canada). All the families of these regions that have a child with an ID aged from 6 to 18 years and who is the beneficiary of public services from one of the rehabilitation centers for ID have received a letter informing them of the main objectives of the study. The letter also stated that they would be contacted shortly by a professional from their center to invite them to participate. In a telephone call, the professional has presented the study objectives, confidentiality and anonymity measures and obtained the consent of families to send their contact information to the principal investigator if they met inclusion criteria: having custody of their child with an ID and for two-parent families, both had to consent to take part in the project. A second telephone call was made by a research assistant to fix an appointment with parents at home or at a place of their choice. During the visit, the parents signed the consent form before participating to an audio-recorded semi-structured interviewed (60 min) in order to complete the grid of personal projects to avoid filling the grid too cumbersome for the parents. In the case of two-parent families, two assistants were present to avoid the parents' responses being influenced by discussions. A financial compensation of Can$60 per family was granted.

Participants

The sample includes 47 women and 36 men from 49 families. Almost half of families are traditional or nuclear (50.9%), around one fifth (18.4%) are step-families and almost a third are single parents (30.6%). For parents involved in a couple relationship, the average duration of conjugal life is 16.28 years ($SD = 7.73$). The average age is 42.93 years old ($SD = 6.92$) for mothers and 46.50 years old ($SD = 6.93$) for fathers ($t(79) = 2.30$, $p < .05$). Over half of parents (53.0%) have a high school diploma, a quarter (25.3%) obtain a college diploma and more than a fifth (21.7%) earn a university degree. The average number of children living full-time at home is 2.57 ($SD = 1.0$) but for about 15% of the parents, their only child has an ID. Overall, 27 boys and 22 girls with an ID are part of the families in the sample, and 55.1% are between 6 and 11 years old whereas 44.9% between 12 and 18 years old.

Regarding professional life, the vast majority of parents (81.9%) are workers and more than half (55.1%) are part of a double-income couple. Among single parents, 53.3% are active on the labor market. As workers, the average number of years of experience is 11.73 ($SD = 8.44$) for mothers and 17.02 ($SD = 10.56$) for fathers ($t(61) = -2.18$, $p < .05$). Most have a regular or permanent job (88.1%), work outside the home (85.3%) and almost three quarters (72.1%), on a day schedule. Fathers (94.1%) are more likely than mothers (70.6%) to hold a full-time job ($\chi^2(1, N = 68) = 6.48$, $p < .05$), while mothers are more numerous ($n = 13$; 15.7%) than fathers ($n = 2$; 2.4%) not to participate in the labor market ($\chi^2(1, N = 83) = 6.73$, $p < .01$). The main reasons to explain this situation are: children's care and household chores ($n = 13$), other sources of income ($n = 8$), work-family balance problems ($n = 6$) and sufficiency of the spouse's salary ($n = 3$). Regarding the financial domain, over two thirds (68.3%) report having enough money to support their family needs, and 18.3% declare being financially comfortable. On the other hand,

more than a tenth (13.4%) considers themselves poor or very poor.

Instrument

The personal project analysis (Little, 1983; Little & Coulombe, 2015) is a reliable and valid way for the evaluation of activities directed toward a personal goal which can be linked to different life domains (e.g., work, parenting, conjugal life), distinguished by their stage of advancement (in progress, to be done) and their level of complexity (e.g., exercise three times a week, be less stressed). Some projects require collaboration or are part of a long-term goal. According to the socioecological model of Little and Coulombe (2015), the well-being of an individual and the way he copes with his life domains depend on the nature of his projects and their type of interactions (independent, conflictual, facilitating or both of the latter). This analytical grid provides the most comprehensive assessment available for people's goals (Bedford-Petersen et al., 2019) and its flexibility allows to select features which apply to the population studied (Van Damme et al., 2019).

Firstly, the parents listed their personal projects (e.g., spare more time with my husband, find a good babysitter). Then, they identified the 5 most important and evaluated each of them on 18 features using a scale of 0 (not at all) to 10 (extremely) (Scale labels can vary from one dimension to another.). These features serve to characterize the self-determination of each project (Sheldon & Elliot, 1999), the cognitions maintained toward them as well as the emotions about them (Little & Coulombe, 2015).

To assess the self-determination of the projects, parents had to pronounce themselves relatively to four *motivations* for each of them (external: someone or a situation requires it; introjected: ashamed, guilty or anxious feeling if not realized; identified: must be done because it is an important goal; and intrinsic: for the joy and the pleasure that it procures). Consequently, an unweighted relative autonomy index (RAI) was calculated, by adding the results to the identified and intrinsic motivations and by subtracting those obtained from the introjected and external motivations (Howard et al., 2017; Sheldon et al., 2017). Three cognitive dimensions were also assessed: the meaning of the projects, their manageability and their social aspect. For the ***meaning*** dimension, the parents shared information about commitment (How engaged are you in this project?) and congruency of projects with their values (To what extent is this project consistent with the values that guide your life?). For the ***manageability*** dimension, they evaluated the level of difficulty of the project (How difficult do you find it to carry out this project?), its compatibility with other projects (What are the consequences of this project on your other ones?), their feeling of control in the projects (How do you evaluate the control you have in this project?), their progression level (How successful have you been in this project so far?), the adequacy of time invested (How adequate is the amount of time you spend working on this project?), their feeling of competence (To what extent do you feel competent to carry out this project?) and the likelihood of success of the projects (How successful do you believe this project will be?). For the ***social*** dimension, they reported the perception of others toward their projects (How important is this project seem to be for people who are close to you?), the support they receive from them (To what extent do you feel this project is supported by people?) and the compatibility of their projects with those of significant people in their surroundings (What are the repercussions of this project on the projects of people around you?). Finally, the parents explained how they feel positive (pleasure,

pride, enthusiasm, hope) and negative (stress, anxiety, sadness, frustration, guilt) *emotions* while they think about or carry out their projects.

Fidelity and validity of the grid of personal projects were demonstrated. High level of inter-judge agreement was observed in the categorization of projects in their domains of activities (Little & Gee, 2007). Factorial analyses on several features of the cognitive and affective dimensions revealed five factors: meaning, manageability, connection, positive and negative emotions (Little & Coulombe, 2015). Moderate alpha coefficients were obtained for the different dimensions by considering the responses provided for all projects (Little et al., 1992). To sustain validity, the features of the grid for personal projects were also correlated to measures of quality of life, depressive symptoms, life satisfaction, etc. (Little & Coulombe, 2015).

Researchers created an overall score for each of the 18 features assessed by averaging participant responses provided across all five most important projects. Moreover, a global score was created for the three cognitive dimensions. A meaning index was calculated by averaging the responses provided about projects commitment and their congruency toward values. This procedure was also used to create a project manageability index by calculating the average of responses on the following features: difficulty level (reverse score), feeling of control, progression level, adequacy of time invested, feeling of competence, and likelihood of success. Finally, a social support index was estimated by averaging the responses provided in regard to the importance of their projects and the support they received from people close to them.

Results

Based on the categories proposed by Little and Coulombe (2015) and following a thematic content analysis, the five main projects selected by the parents were grouped into nine categories by two coders: schooling, work, health, intrapersonal, interpersonal, recreational/leisure, context of life, conjugal life and parenting (see Table 1). In ascending importance order, the parents' priority project concerns health (23.8%), parenting (20.2%), work (14.3%) or living context (14.3%), recreational/leisure (11.9%), conjugal life (7.1%), interpersonal relationships (4.8%), intrapersonal aspects (2.4%) or schooling (1.2%). More specifically, the content of the priority projects concerns: autonomy and potential development of their children ($n = 10$), family travelling or vacations ($n = 7$), searching for a new job, acquisition/expansion of a business ($n = 5$), couple activities ($n = 5$), renovations and construction to improve their living environment ($n = 5$), health care actions ($n = 4$), physical activities ($n = 4$), respite and relaxation ($n = 4$) as well as better working conditions ($n = 4$).

When the five main projects of the parents are considered (One parent mentioned only four important projects.), the 419 projects are distributed as follows (see Table 1): recreational/leisure (25.3%), health (16.9%), life context (16.7%), parenting (12.4%), work (11.0%), conjugal life (10.5%), intrapersonal aspects (2.9%) or schooling (2.4%) or interpersonal relationships (1.9%). In sum, when all projects are considered, the recreational/leisure domain is more prominent (from 11.9% to 25.3%) while parenting and health domains decrease (respectively from 20.2% to 12.4% and from 23.8% to 16.9%). However, it is important to mention that recreational/leisure projects are involving family vacations or time shared together and related to parenting.

Table 1

Distribution of parents' projects according to domains

Domains	Priority project		Five main projects	
	n	%	*n*	%
Interpersonal	4	4.8	8	1.9
Schooling	1	1.2	10	2.4
Work	12	14.3	46	11.0
Intrapersonal	2	2.4	12	2.9
Recreational/leisure	10	11.9	106	25.3
Health	20	23.8	71	16.9
Context of life	12	14.3	70	16.7
Conjugal life	6	7.1	44	10.5
Parenting	17	20.2	52	12.4
Total	84	100.0	419[a]	100.0

[a] One parent mentioned only four out of five important projects.

In the semi-structured interview, the parents had to take position regarding motivations underlying their projects (see Table 2). Overall, the average of relative autonomy index is 6.25/10. This means that parents do not necessarily undertake all of their projects for intrinsic reasons. In order of importance, the four main categories of projects that are most extrinsically motivated (someone or a situation requires it) are: interpersonal relationships (6.25/10; e.g., take care of their sick mother, resolve family conflicts), parenting (6.11/10; e.g., develop children's autonomy, promote social integration of their child with an ID, take care of their child as best as possible), work (5.98/10; e.g., increase business value, find a steady job, decrease workload) and health (5.85/10; e.g., exercise, lose weight, quit smoking). Moreover, in comparison to other domains, projects related to parenting (6.01/10) and interpersonal relationships (5.25/10) are those for which they would experience more shame, guilt or anxiety, if they were not accomplished. Concurrently, those projects represent the most important goals (8.81 and 8/10 respectively) as well as schooling (8.3/10), health (7.79/10) and work (7.78/10) projects. Concerning intrinsic motivations or making projects for the joy and pleasure that they procure, conjugal life (8.8/10; e.g.,

going out, traveling and being couples) and recreational/leisure (8.47/10; e.g., vacation or family travel) projects are the most mentioned. When all the motivations are considered, the most self-determined projects refer to conjugal life (9.82/20), schooling (8.4/20) and recreational/leisure (8.04/20) domains.

Three cognitive dimensions were also discussed in the context of the semi-structured interviews: the meaning of the projects, their manageability and their social aspect. Regarding meaning of the projects, the parents report that they were fairly engaged in them (6.83/10) and generally targeted projects in harmony with their values (7.94/10). The domains in which the parents are currently the most engaged are professional life (schooling and work, respectively 7.7 and 7.54/10) as well as parenting (7.54/10). The projects related to these life domains are also the most congruent with their values (parenting: 8.88/10; schooling: 8.6/10; work 8.17/10). The projects that have the least meaning for them concern their context of life (6.64/10; e.g., helping the spouse with housework and meals, doing more outdoor manual work).

Table 2

Means and Standard Deviation according to the 5 dimensions and the 18 features of the projects

	Motivation					Meaning		
	Extrinsic	Introjected	Identified	Intrinsic	Relative autonomous index[a]	Engagement	Value congruency	Meaning index
Domains								
Interpersonal	6.25	5.25	8.00	7.13	3.63	6.00	7.75	6.88
	(4.10)	(3.69)	(2.56)	(2.23)	(6.25)	(3.51)	(2.66)	(2.59)
Schooling	2.90	3.80	8.30	6.80	8.40	7.70	8.60	8.15
	(3.78)	(4.54)	(2.11)	(3.68)	(6.60)	(2.54)	(1.58)	(1.81)
Work	5.98	3.57	7.78	7.41	5.65	7.54	8.17	7.86
	(3.22)	(3.61)	(2.30)	(2.61)	(6.02)	(2.69)	(1.76)	(1.88)
Intrapersonal	4.17	4.42	7.50	6.33	5.25	7.25	7.33	7.29
	(3.90)	(3.63)	(2.88)	(2.99)	(7.42)	(2.73)	(2.23)	(2.10)
Recreational/ leisure	4.48	2.60	6.65	8.47	8.04	6.86	8.05	7.45
	(3.59)	(3.09)	(2.65)	(2.02)	(5.70)	(2.63)	(1.97)	(1.92)
Health	5.85	3.42	7.79	7.51	6.03	6.34	8.01	7.18
	(3.85)	(3.34)	(2.27)	(2.90)	(6.79)	(3.13)	(2.13)	(2.28)
Context of life	5.74	3.46	6.61	6.80	4.21	6.51	6.77	6.64
	(3.42)	(3.25)	(2.76)	(3.20)	(6.68)	(3.15)	(3.05)	(2.69)
Conjugal life	3.73	2.52	7.27	8.80	9.82	6.27	8.07	7.17
	(3.30)	(2.68)	(2.57)	(1.56)	(6.31)	(3.00)	(2.10)	(2.23)
Parenting	6.11	6.01	8.81	6.71	3.40	7.54	8.88	8.21
	(3.68)	(3.67)	(1.70)	(2.93)	(6.52)	(2.79)	(1.68)	(1.97)
Total	5.20	3.54	7.38	7.60	6.25	6.83	7.94	7.38
	(3.65)	(3.46)	(2.54)	(2.72)	(6.61)	(2.91)	(2.25)	(2.21)

Table 2 (Continued)

Domains	Manageability									Social context			Emotions	
	Difficulty	Compati-bility (projects)	Control	Progress	Time adequacy	Compe-tence	Likeli-hood of success	Mana-geability index[b]	Impor-tance for others	Support	Compati-bility (projects of others)	Social support index[c]	Positive	Negative
Interpersonal	5.63 (3.50)	5.50 (4.00)	5.75 (4.06)	5.38 (2.72)	6.00 (3.55)	6.88 (2.64)	8.29 (1.89)	5.97 (2.03)	6.00 (4.31)	4.38 (3.54)	2.13 (4.02)	5.19 (2.87)	7.38 (3.58)	5.63 (3.58)
Schooling	6.60 (2.37)	6.60 (3.86)	7.50 (3.41)	6.00 (3.46)	5.90 (3.90)	8.00 (1.15)	8.20 (1.99)	6.50 (2.13)	4.00 (2.83)	5.90 (3.57)	4.30 (3.68)	4.95 (2.85)	8.00 (1.76)	4.50 (3.60)
Work	4.93 (2.94)	5.17 (3.58)	5.93 (3.05)	5.26 (3.30)	6.52 (3.33)	7.59 (2.45)	8.22 (1.88)	6.40 (1.87)	7.20 (2.59)	6.72 (2.91)	5.38 (3.90)	6.92 (2.39)	8.43 (2.02)	4.09 (3.06)
Intrapersonal	4.58 (3.18)	6.00 (3.72)	6.83 (1.95)	5.79 (1.83)	6.50 (2.07)	6.83 (2.12)	8.50 (1.45)	6.65 (1.31)	6.50 (3.23)	5.50 (4.08)	7.25 (3.31)	6.00 (3.21)	7.42 (2.97)	4.08 (3.06)
Recreational/ leisure	4.02 (3.37)	3.16 (3.36)	6.81 (2.82)	4.96 (3.37)	5.99 (3.34)	7.43 (2.51)	7.77 (2.26)	6.47 (2.24)	5.60 (3.16)	5.18 (3.61)	3.50 (3.60)	5.35 (2.83)	8.67 (1.83)	2.63 (2.92)
Health	6.06 (3.12)	5.13 (3.88)	6.28 (3.01)	5.25 (3.16)	4.39 (3.41)	7.11 (2.59)	7.46 (2.06)	5.75 (2.16)	5.75 (3.53)	5.57 (3.33)	4.40 (3.58)	5.60 (2.94)	8.08 (2.35)	3.63 (3.41)
Context of life	4.57 (3.57)	4.24 (3.41)	5.77 (2.87)	4.19 (2.97)	4.44 (3.15)	6.84 (2.96)	8.19 (2.23)	5.81 (1.90)	5.58 (3.69)	5.63 (3.46)	3.94 (3.45)	5.55 (3.14)	7.76 (2.58)	3.04 (2.99)
Conjugal life	5.09 (3.20)	3.93 (3.71)	5.95 (2.43)	3.52 (3.21)	4.84 (3.50)	7.27 (2.64)	7.51 (2.41)	5.65 (2.09)	5.86 (3.31)	5.00 (3.31)	3.32 (3.04)	5.38 (2.92)	8.82 (1.42)	2.30 (2.62)
Parenting	5.12 (2.94)	5.81 (3.53)	6.27 (2.69)	5.69 (2.57)	6.73 (2.65)	7.13 (2.30)	7.75 (2.22)	6.41 (1.86)	7.55 (2.57)	6.29 (3.28)	4.96 (3.41)	6.88 (2.61)	8.19 (2.11)	4.75 (3.07)
Total	4.91 (3.28)	4.51 (3.68)	6.29 (2.86)	4.91 (3.15)	5.50 (3.35)	7.23 (2.55)	7.85 (2.17)	6.13 (2.06)	6.06 (3.30)	5.62 (3.42)	4.19 (3.61)	5.80 (2.90)	8.27 (2.18)	3.40 (3.14)

Note. Mean scores may vary from 0 (not at all) to 10 (extremely) excepted for relative autonomous index which varies from -20 to 20. Values in parentheses represent standard deviation.

[a] Means scores to relative autonomous index are unweighted.

[b] Compatibility with other projects was not considered to establish the Manageability index.

[c] Compatibility with projects of significant people was not considered to establish the Social support index.

Overall, parents have certain doubts related to manageability of their projects (6.13/10), even if their difficulty level is not quite high (4.91/10). Globally, they feel sufficiently competent to carry out their projects (7.23/10) but feel relatively little control over their implementation (6.29/10), due particularly to the adequacy of time invested (5.5/10). In sum, they remain confident about their likelihood of success (7.85/10), even if their progression levels are not yet quite advanced (4.91/10) and they perceive that their projects are not fully compatible (4.51/10).

The projects perceived as the most difficult to carry out are related to schooling (6.6/10; e.g., return to school, finish school) and to health domains (6.06/10; e.g., lose weight, quit smoking, find time to work out). Health-related projects are those with the lowest likelihood of success (7.46/10), while schooling ones have the highest (8.2/10). Although it might seem contradictory, projects related to schooling are the most compatible with the others (6.6/10) and those for which the parents feel the most control (7.5/10), competence (8/10), and the highest impression of progression level (6/10). Several of these characteristics (e.g., compatibility = 6/10; control = 6.83/10; progress = 5.79/10) also concern intrapersonal projects (e.g. being a better organized person) except for the feeling of control which is the lowest (6.83/10) found in all domains examined and for the likelihood of success which is the highest (8.50/10). It is also important to note that intrapersonal projects of parents are the most satisfying regarding the adequacy of the time invested (6.50/10) after parenting (6.73/10) and work (6.52/10). In fact, it is in their professional life, schooling (8/10) or work (7.59/10), that they report the greatest feeling of competence. Interpersonal relationships (5.75/10; e.g., developing a social network,

caring for a sick loved one) and life context (5.77/10; e.g., finding a babysitter, buying a house, doing more home exterior work) are the two domains in which control over projects is the weakest and where the feeling of competence is among the lowest (6.88 and 6.84/10, respectively) with intrapersonal projects (6.83/10). Despite this, the projects with the lowest overall manageability level concern the conjugal life (5.65/10). In fact, these projects are considered less compatible with the others (3.93/10) as well as recreational/leisure ones (3.16/10).

Parents were also asked about others' perceptions of their projects. Overall, they feel that their projects are important to others (6.06/10). However, they report receiving relatively little support for their achievement (5.62/10) and consider that their projects generally have little impact on those of significant people for them (4.19/10). From the parents' point of view, the most important projects for people who are close to them concern parenting (7.55/10) and work (7.2/10), while projects related to schooling are the least important (4/10). Projects related to parenting (6.72/10) and work (6.29/10) also receive the most social support. Finally, the projects having the least impact on those of significant people of parents are related to interpersonal relationships (2.13/10), conjugal life (3.32/10) and recreational/leisure (3.50/10).

In the last part of the semi-structured interview, parents were asked to comment on the positive and negative emotions they felt about their projects. Overall, the emotions reported being more positive (8.27/10) than negative (3.40/10). The projects related to conjugal life (8.82/10), recreational/leisure (8.67/10) and work (8.43/10) generate the most positive emotions. However, those related to interpersonal relationships (5.63/10) or parenting (4.75/10) arouse the

most negative emotions. A more specific examination of the content of parents' projects indicated that those related to caring for a sick loved one, the future of their child with ID, quitting smoking or being better organized generate more negative emotions than positive ones. Conversely, the projects that arouse the most positive emotions in comparison to negative ones concern being a better person, moving into another house or having couple activities.

Analysis of Projects by Parent's Gender

Some differences seem to emerge when comparing the projects mentioned by mothers and fathers. In their professional life, fathers have more specific projects to carry out at work (e.g., acquisition of equipment or machinery, business automation) while mothers report more often to involve in schooling activities (e.g., finish them, return to them or take training). Concerning life context, fathers also have more renovation and construction projects than mothers (e.g., renovate the house, redo house or cabin roofing, finish or build a garage). For conjugal life, it is interesting to note that mothers would like to spend more time with their partner while fathers wish to do more activities with their spouse (e.g., travels, outings).

In general, mothers' projects seem more self-determined than those of fathers. Compared to mothers, the latter would be more affected by feelings of shame, guilt or anxiety if they did not carry out certain projects. Despite this, mothers tend to report more negative emotions than fathers in the realization of their projects.

Analysis of Projects by Child's Gender

When parents' projects are compared according to the gender of their child, some differences are noted. The parents of a girl mention more projects aimed at developing their child's autonomy or potential than those of a boy. They also tend to evoke more projects related to be a better parent or to support the socialization of their child. Conversely, boy's parents tend to formulate more projects of respite moments or relaxation nature.

Overall, the parents of a girl view their projects as more important and with a greater congruency value than those of a boy. In addition, they feel having both a greater control and a greater progression level in their projects as well as a higher feeling of competency in their accomplishment. They also consider that the invested time is more adequate, and that the likelihood of success is higher. In short, they are more confident about the manageability of their projects which generate more positive emotions.

Analysis of Projects by Child's Age

When parents' projects are compared in terms of child's age with an ID, the main difference refers to recreational/leisure domain. Parents with older children (from 12-to-18 years old) state more individual leisure activities (e.g., traveling, gardening, reading) or activities outside the family (e.g., going out with friends, sports tournaments, music band) than those with younger children (from 6-to-11 years old). Regarding the intrapersonal domain, some parents of a young child wish to be more organized (e.g., stop preparing meals at the last minute, perform the daily routine more adequately) which it is not the case for parents of an older child.

Overall, parents of an older child evaluated their projects as more self-determined than those of parents of a younger one. They also perceived themselves as more committed to their projects and consider their progression level as more advanced. They also feel more competent to carry them out and judge that their likelihood of success is greater. In

summary, they obtain higher results on several indicators linked to the manageability of their projects.

Analysis of Projects by Family Type

The projects listed by the parents were also analyzed according to their type of family. Single parents tend to report more projects related to the health domain (e.g., taking care of them, having time for themselves) than those from traditional or step-families. Similarly, they evoke more respite and relaxation projects than parents of traditional families. In terms of interpersonal relationships and recreational/leisure domains, single parents tend to report respectively more socialization-related projects (e.g., getting out of the house a little more, developing a social network) and less projects concerning time spent with family than those of other types of family. Regarding life context, single parents or parents in step-families report more projects about purchases (e.g., house, cabin, truck, caravan) than those of traditional families who tend to focalize on renovations or construction work (e.g., renovate the house, redo the floors, finish or build a garage). Parents in step-families also tend to have more living space development projects (e.g., set up a playroom, refurbish the basement, set an outdoor playground for children) than those from other family types. Regarding parenting, parents from traditional families tend to formulate more projects concerning the autonomy and the potential development of their child with an ID. For conjugal life, step-family parents exhibit more projects related to couple activities, while those of single or traditional families concern respectively meeting a partner and spending time with the spouse.

Parents from traditional and step-families consider their projects more intrinsically motivated than those of single parents. They also feel to be more committed to their projects and assign them a greater meaning. Single parents are less confident about the manageability of their projects than those of other types of family. They perceive their projects as more difficult to realize and feel less competent to carry them out. In addition, even if they feel that their compatibility is greater, they find that the amount of time invested is less adequate. They also report less support in their realization and have more negative emotions about their projects.

Discussion

The aim of this study was to list and describe the main projects of mothers and fathers of a child with an ID as well as to identify their underlying motivations, beliefs about them, perceived social support and affects aroused considering the various characteristics (e.g., constraints, opportunities) of their social environment. Differences between mothers and fathers as well as the gender and age of children with an ID and family types was also examined.

Content of Parents' Projects

Contrary to expectations, the content of the five most important projects of the parents is not directly related to resources and services to meet specific needs of their child with an ID whether it concerns social and health services, education, improvement of living space, etc. However, some parents report difficulties finding a babysitter as well as respite, but these aren't explicitly linked to their service expectations. This may be due to the fact that the parents in the sample receive services from a rehabilitation center for people with an ID. It is also possible that over time, they have developed strategies to meet their expectations regarding the important needs of their children. It is also important to remember that the perspective adopted in this research focused on parents' projects. Moreover, at the start of the semi-structured

interview, some parents were surprised or destabilized by the content of the questions which were not addressing directly the condition of their child with an ID. This reaction is conceivable given that parents, especially mothers, often tend to prioritize the needs of the child to the point of forgetting their own projects (Bourke-Taylor & Jane, 2018).

As expected, projects related to parenting and work are in harmony with parents' values and among their priorities. In fact, family and work are the two most salient life domains for a majority of people (Elizur et al., 2008). In addition, from the parents' point of view, work and schooling make them feel competent. This result converges with those of previous studies which indicate that work life represents a source of accomplishment and a respite opportunity for parents of a child with chronic illness (George et al., 2008). Despite these findings, it is important to emphasize that health-related projects are the first priorities for the parents of the sample, especially for single parents. These results can be explained by the challenges linked to their work and family balance which may have led them to neglect their health (Bourke-Taylor & Jane, 2018). Parents can therefore imagine that it is now a priority to devote time and energy to their health, notably because the situation requires it to avoid the appearance or aggravation of health problems. However, their life context makes it difficult to carry out these projects given the doubts expressed about likelihood of success. It is also important to emphasize that such priority can also be associated with the current promotion of healthy lifestyle habits (diet, physical activity) (Adams, 2019).

Analysis of Projects by Parent's Gender
The results reveal that mothers manifest more self-determination than fathers in carrying out their projects, but also mention facing more negative emotions. For some of them, going back to school or following courses seem to be a complementary way of accomplishing themselves or to access a potentially rewarding professional life (Stromquist, 2005). On their side, fathers would feel more ashamed, guilty or anxious than mothers if certain projects were not realized. Indeed, some fathers feel that they are not sufficiently present or would like to offer more support to their spouse. This could be explained by their other responsibilities like more specific projects at work or related to life context domains as home renovation or construction. These results are consistent with the traditional roles adopted by mothers and fathers in relation to family and professional responsibilities (Cless & Stephenson, 2018; Marsh et al., 2020).

Regarding conjugal life, fathers plan for more couple activities like outings or vacations, while mothers expect to spend more time with their spouse, but without necessarily specifying the context. Concerns and lack of time of mothers can interfere with couple activities. Thus, the desire to spend time with their husband is present, but the means are not really materialized. According to several authors (Bourke-Taylor & Jane, 2018), parenting comes with time reduction for themselves, leisure or partner. Nevertheless, the importance of leisure and physical activities for mental health has been demonstrated (Tamminen et al., 2020). The greater satisfaction toward time spent to conjugal life and intimacy are also essential to achieve dyadic adjustment (Stapley & Murdock, 2020).

Analysis of Projects by Child's Gender
Parents of a girl with an ID are generally more positive about their projects than the ones of a boy. In fact, they assess them as more important and congruent with their values. For the parenting domain, their

projects more often concern the development of their child's potential and autonomy, as well as his socialization skills. On their side, parents of a boy with ID expose more respite projects. Such results could be explained by the sex-differentiated behaviors of parents toward their child (Wood & Eagly, 2002) as well as the higher prevalence of exteriorized behaviors of boys (Emerson, 2003). Since mothers are usually the primary caregivers and that the mother-daughter relationship is particular, they may be more engaged in their daughter projects due to the role they expect to play in the transmission of certain social values such as independence and interpersonal relationships (Ramirez et al., 2017).

Analysis of Projects by Child's Age
The results also reveal that the parents of an older child with an ID formulate more self-determined projects are more committed to them than parents of a younger child. They plan more individual leisure activities and outing activities with friends. However, parents of a younger child mention more intrapersonal projects aiming at being more organized. These results may be explained by a higher autonomy level of the child and the experience acquired by the parents leading them to adopt daily routines and better adjustment strategies (Mas et al., 2016). In sum, these results are consistent with studies showing that family demands vary according to the family life cycle and reach their peak when children are younger (Huffman et al., 2013).

Analysis of Projects by Family Type
Single parents report fewer intrinsically motivated projects than parents of traditional or step-families. Their projects seem to have higher levels of difficulty and they feel less competent to carry them out. In fact, they perceive the invested time in them as less adequate and report less social support in

their achievement. Single parents also mention more projects related to the health (e.g., respite) and interpersonal relations (e.g., socialization) domains. Like the parents of step-families, single parents foresee more changes in their living contexts than traditional families. These three family types are characterized differently in regard to couple projects. Single parents wish to meet a partner, those in step-families plan to carry out activities with the spouse, while those in traditional families evoke the desire to spend more time as a couple.

Some of these results seem to attest for the load of responsibilities specific to single parenting (Brown & Clark, 2017) as well as the desire to form a couple in a context of family reorganization taking into account all of the involved challenges (Dupont, 2016). As the support of family and friends mainly concerns parental and worker roles, the situation of single parents can be particularly stressful for their other life domains. This is especially worrying since they generally receive little or no support outside the close and extended family. Their responsibilities can therefore appear burdensome without the support of a spouse with whom it would be possible to share and exchange views (Boyd et al., 2019; Brown & Clark, 2017). Their life context may contribute to their loneliness given they evoke socialization projects.

Contributions and Limits
This research appears to be the first to emphasize on the personal projects of parents having a child with an ID. Particularly, this study investigated the positive aspects related to their parenting experience and adopted a broader perspective by taking into account projects in all of their life domains. The study's methodology gave parents a privileged space to express their projects and share about their personal specific meaning. This approach appeared surprising for some

parents due to the fact that their life and services are mostly centered on their child.

The sampling method which required participation of couples, and also single parents, allowed to obtain fathers' point of view, who are generally under-represented in studies. However, the conjugal dynamic was not considered in the analyses. Moreover, the low occurrence of certain projects (e.g., interpersonal or intrapersonal projects) precludes the possibility of further analysis.

Some limits concern the sample representativity. Around 10% of parents refused to participate in the research mostly due to lack of time. It is also important to remember that the parents of the sample were recruited through rehabilitation centers for people with an ID and receive formal support for their child which is not necessarily true for other parents. This approach was chosen in order to facilitate and maximize the chances to reach populations affected with low prevalence conditions.

Perspectives for Future Studies and Practical Considerations
This descriptive study could lead to correlational research on the projects of the parents having a child with an ID in order to identify more precisely the most favorable projects to their psychological health. Such knowledge could help to target appropriate support measures for them. A particular attention could be addressed to single parents as well as to the conjugal dynamics of parents of traditional or step-families. For these, an interesting path of research would be to investigate the individual and shared projects of couples, and to establish a link with conjugal satisfaction and the adaptation of their children. Similarly, the terminology used by parents to state their projects (try to, continue to, would like to, should do) could be analysed in relation to psychological

health. For example, if the person mentions "trying to do" rather than "doing" something, it can evoke uncertainty about the likelihood of success of the project as well as weaker feelings of competence or control over its realization (Chambers, 2007). Finally, researches could further delineate the meaning of the differences found between parents' gender, child's characteristics as well as the type of families.

The professionals working with parents having a child with an ID could probably consider personal project analysis from Little's method (1983) and help parents to co-build projects that are consistent with what they are, but also the environment in which they live. This could be an effective and efficient way to obtain an individualized past, present and future portrait of parents' projects.

Conclusion
The analysis of parents' personal projects allowed to highlight their diversity of their projects. Such an analysis allows parents to be assessed in respect to their context. Their projects are a reflection of their aspirations, interests, personality, etc., but also of their specific opportunities and constraints from their living environment.

Beyond the roles of worker and parent, health remains a goal to attain for them. Although the space devoted to leisure and conjugal life is marked by positive emotions and supported by intrinsic motivation, the insufficient time available means that these domains are not prioritized as much as desired. However, the lack of data available from samples of parents from the general population limits possible comparisons. The study also revealed that parents of a child with an ID can generally get support from significant people around them for work and family responsibilities. However, it is more

difficult to count on their help for their other life domains. Due to all of their responsibilities, some parents have to postpone projects known for their protective properties on psychological and physical health (leisure, health, time for themselves and for the couple), and for which they receive little support. Furthermore, single parents as well as those having young children with an ID would be particularly at risk given their amount of obligations and the period of experimentation and adjustment regarding strategies and routines.

In sum, the present results lead to a better understanding of significant and intrinsic projects of mothers and fathers having a child with an ID. They also contribute to targeting the favorable conditions to support their achievement and hopefully to promote self-actualization and well-being of parents susceptible to experience high levels of distress.

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Using High-Leverage Practices to Support Social-Emotional Learning

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Abstract: The Council for Exceptional Children (CEC) and The Collaboration for Effective Educator Development, Accountability, and Reform (CEEDAR) Center have developed a set of practices to increase student outcomes in special education. This article aims to provide practitioners with an overview of the High-Leverage Practices (HLPs) in special education. Similarities and differences between HLPs and evidence-based practices (EBPs) are explained, as well as their foundation in educational policy. This paper provides an overview of social-emotional learning, along with specific HLPs that address social-emotional learning. The "Social/Emotional/Behavioral" HLP research syntheses are discussed in detail with practical classroom implementation strategies. Resources for further professional development are shared.

There is a growing national need to address teacher quality. Research has indicated that teacher quality has a higher impact on student achievement than school climate, curriculum, and school resources (Kuriloff et al., 2019; National Commission on Teaching & America's Future, 1996). A 2015 study with teachers as participants revealed there is a strong and growing need for educators to be better prepared to meet the needs of a diverse student population in terms of demographics, identity, and learning needs (Varela & Maxwell, 2015). According to Kuriloff et al. (2019), as many as 72% of teachers feel underprepared to work in a classroom and 62% feel underprepared to teach diverse students.

Implementing effective educator practice is of paramount importance, particularly in the context of inclusive settings. According to the National Council on Disability (2018), 81% of students with disabilities are educated in the general education setting for at least 40% of their school day. To meet the needs of students with disabilities in inclusive settings, the Individuals with Disabilities Education Act (IDEA) emphasizes "applying replicable research on proven methods of teaching and learning for children with disabilities" and providing teachers with professional development based on "scientifically-based research" (2004). The push for inclusion is not limited to the United States; there is an international initiative for inclusive education. The Salamanca Statement of 1994, which garnered support from 92 nations, proclaimed that every child has a foundational right to education and acknowledged inclusive education as the most effective form of education (United Nations Educational, Scientific, and Cultural Organization, 1994).

Importance of Implementing Social-Emotional Learning with Teaching Practice

To meet the increasing demand for teachers who are equipped to teach in classrooms with a dynamic range of student abilities and needs, the Council for Exceptional Children (CEC) partnered with the Collaboration for Effective Educator Development, Accountability and Reform (CEEDAR) Center to develop the *High-Leverage Practices in Special Education* (McLeskey et

al., 2017). Among the practices discussed in this book include practices that support the social, emotional and behavioral needs of students with disabilities. These social-emotional learning (SEL) related practices are critical for the academic and postsecondary success of students with disabilities. Persons with Autism Spectrum Disorder (ASD) or Intellectual Disability (ID) are historically underrepresented in the workforce and on college campuses (Grigal & Papay, 2018). Addressing SEL skills throughout K-12 teacher practice leads to improved outcomes for students in these disability categories. "Children who master SEL skills get along better with others, do better in school and have more successful careers and better mental and physical health as adults" (Jones et al., 2017, p. 49). This article aims to provide an overview and clarity on the High-Leverage Practices (HLPs), compare and contrast evidence-based practices (EBPs), and describe specific HLPs that develop social-emotional learning skills for our students with ASD and ID.

High-Leverage Practices
High-leverage practices (HLPs) were developed as a tool for special educators to reference and apply within their practice and for teacher educators to incorporate into teacher education programming. According to Merriam-Webster, the noun variant of "leverage" is defined as "1: the action of a lever or the mechanical advantage gained by it; 2: Power, Effective" (Merriam-Webster, 2020). These specific practices leverage student achievement through proven-methods of teaching and learning. TeachingWorks originally developed High-leverage practices at the University of Michigan (TeachingWorks, 2020). This set of HLPs was designed for a general education audience and contains 19 different practices that are "critical to helping students learn content" (TeachingWorks, 2020, para. 1). In

2015, CEC and CEEDAR developed the *High-Leverage Practices in Special Education*. This article will be referring to this set of HLPs hereafter.

There are a total of 22 HLPs organized under four categories, as known as research syntheses. The four categories are: Collaboration, Assessment, Social/Emotional/Behavioral Practices, and Instruction (McLeskey et al., 2017). The 22 HLPs and four research synthesis development resulted from the collaboration between researchers, educators, higher education faculty and staff, and other education stakeholders. First, a writing team was formed to develop and revise a draft list of HLPs. Then, focus groups were held at the Teacher Educator Division (TED) Conference and the National CEC Convention. The writing team incorporated the feedback from these focus groups, and then TED sent the draft to the CEC Representative Assembly meeting in April of 2016. The final draft was presented to the Board of Directors in July of 2016 (McLeskey et al., 2017).

Evidence-Based Practices
EBPs are research-based instructional practices that have been repeatedly demonstrated as effective based on experimental research designs (The National Professional Development Center on Autism Spectrum Disorder, 2014; What Works Clearinghouse, 2020). What Works Clearinghouse, an initiative funded by the U.S. Department of Education, is responsible for developing the rigorous research methodology standards used to determine EBPs within education. Single-subject research designs or group research designs are typically used to evaluate EBPs. In contrast, High-Leverage Practices for special educators are instructional practices identified through qualitative methods by

reviewing research literature and incorporating feedback from focus groups (McLeskey et al., 2017).

Tying the Policy with the Practice
It is important to note that the IDEA does not distinguish between HLPs and EBPs; the IDEA simply uses the phrase "scientifically based research" (2004). Per the IDEA (2004), educators should be providing Specially Designed Instruction (SDI) for students with disabilities. Riccomini and colleagues (2017) developed a framework to clarify the role of SDI and how it relates to high leverage practices.

According to Riccomini et al. (2017), SDI refers to the process of changing instructional content delivery, or methods to meet the individual needs of the student with a disability. These changes or modifications are used to support access to the general education curriculum for students with disabilities and should align with students' Individualized Education Program (IEP) goals (Riccomini et al., 2017). High-leverage practices and evidence-based practices are both aspects of SDI.

Social-Emotional Learning
The phrase "social-emotional learning" refers to the process of developing core interpersonal skills for recognizing and managing emotions, feeling and showing empathy, setting personal goals, maintaining

Figure 1
Venn Diagram with a comparison and Contrast Between HLPs and EBPs.

High-Leverage Practices in Special Education   **Evidence-Based Practices**

- Developed by the CEC in collaboration with the CEEDAR Center
- Developed primarily through qualitative research methods
- Set of 22 practices organized under 4 research syntheses

- Research-based
- Improves student outcomes
- Several practices overlap both categories (i.e. explicit instruction, collaboration, functional behavior assessment, etc.)

- Determined by experimental and quasi-experimental research designs
- Individual studies must meet What Works Clearinghouse standards to qualify as "evidence"
- Innumerable amount of practices as there are many across subject areas

Figure 2

Nested Structure of Special Education Terms (Riccomini et al., 2017, p. 22).

Specially designed instruction
The legal mandate to make adaptations or modifications to the content, methodology, or delivery of instruction to address the unique needs of a child with a disability.

High-leverage practices
A set of professional practices that teachers should master and use in order to provide effective SDI.

Explicit instruction
An HLP used to provide SDI; an approach to instruction that is systematic, direct, engaging, and success oriented.

Intensive instruction
An HLP that refers to the intensity of instruction or intervention; Decisions about increasing instructional intensity are based on progress monitoring.

positive and healthy relationships, and making responsible choices. The Collaborative for Academic, Social, and Emotional Learning (CASEL) has defined SEL to include five core competencies: self-awareness, self-management, social awareness, relationship skills, and responsible decision-making (CASEL, 2019). Table 1 displays the five core competencies with CASEL's definitions of each competency and associated skills (2019).

Table 1
SEL Competencies, Definitions, and Skills (CASEL, 2019).

SEL Competencies	Definition	Skill
Self-Awareness	The ability to accurately recognize one's own emotions, thoughts, and values and understand how they influence behavior. The ability to assess one's strengths and limitations accurately, with a well-grounded sense of confidence, optimism, and a "growth mindset."	Identifying emotions Accurate self-perception Recognizing strengths Self-confidence Self-efficacy
Self-Management	The ability to regulate one's emotions, thoughts, and behaviors effectively in different situations. This includes managing stress, controlling impulses, motivating oneself, and setting and working toward achieving personal and academic goals.	Impulse control Stress management Self-discipline Self-motivation Goal setting Organizational skills
Social Awareness	The ability to take the perspective of and empathize with others from diverse backgrounds and cultures, to understand social and ethical norms for behavior, and to recognize family, school, and community resources and supports.	Perspective-taking Empathy Appreciating diversity Respect for others
Relationship Skills	The ability to establish and maintain healthy and rewarding relationships with diverse individuals and groups. This includes communicating clearly, listening actively, cooperating, resisting inappropriate social pressure, negotiating conflict constructively, seeking and offering help when needed.	Communication Social engagement Relationship building Teamwork
Responsible Decision-Making	The ability to make constructive and respectful choices about personal behavior and social interactions based on consideration of ethical standards, safety concerns, social norms, the realistic evaluation of consequences of various actions, and the well-being of self and others.	Identifying problems Analyzing situations Solving problems Evaluating Reflecting Ethical responsibility

Social-emotional needs of students with Autism Spectrum Disorder
Per the IDEA regulations put forth by the United States Department of Education (USDOE), ASD is "a developmental disability significantly affecting verbal and nonverbal communication and social interaction" (USDOE, 2017, para. 1). These deficits in social skills may also contribute to anxiety and mood disorders later in life (Levy & Dunsmuir, 2020; Myles, 2003). It is common for students with ASD to resist change and enjoy repetitive activities (USDOE, 2017). Explicit instruction and the use of visual supports are often needed to help students with ASD learn to self-regulate behaviors (Spence & Tseng, 2018).

Social-emotional needs of students with an Intellectual Disability
According to the USDOE, ID is defined as "significantly subaverage general intellectual functioning, existing concurrently with deficits in adaptive behavior and manifested during the developmental period, that adversely affects a child's educational performance" (USDOE, 2018,

para. 1). Students with an ID often require explicit instruction in socially appropriate communication skills, such as saying "please" or "thank you." Students with an ID struggle with higher-level conversation or questioning skills, such as asking for clear instructions, asking for help, or engaging in social conversations beyond mere introductions (Park et al., 2020).

To date, much of the research on social-emotional learning for students with ASD or ID has focused on social skill training, communication skills, or self-regulation. Training in social skills and communication falls within the "relationship skills" SEL competency, and self-regulation skills fall under the "self-management" SEL competency (CASEL, 2019). There exists a gap in the research on developing the other three SEL competencies (self-awareness, social awareness, and responsible decision making) as defined by CASEL for students with ASD and ID.

HLP Research Synthesis: Social/ Emotional/Behavioral
As mentioned previously, CEC and CEEDAR organized the 22 HLPs under four research synthesis. The third research synthesis focuses on SEL-related topics. Four HLPs specifically relate to SEL; these HLPs are found in the Social/Emotional/Behavioral research synthesis. These specific SEL-related HLPs are: Establish a consistent, organized, and respectful learning environment; provide positive and constructive feedback to guide students' learning and behavior; teach social behaviors; and conduct functional behavioral assessments to develop individual student behavior support plans. Many of these HLPs are overarching and encompass more specific EBPs. The following paragraphs describe strategies that support the implementation of these HLPs.

HLP 7: Establish a consistent, organized, and respectful learning environment
This HLP focuses on teacher actions that develop and maintain positive relationships with the students. This process involves a multifaceted approach that considers ethical values, the context of behaviors, diversity, and cultural backgrounds. For educators of students with an ID, it is especially important to maintain age-appropriateness when providing instruction (McLeskey et al., 2017).

Rules and procedures
It is essential to differentiate between rules and procedures. Rules are clear expectations regarding behavior across settings (Hattie, 2008; Sprick, 2009). Procedures are explicit steps that inform students on how to complete tasks in a classroom (Wong, 2012). The most effective teachers provide students with specific procedures for tasks throughout the school day. Examples of when to incorporate procedures include when students should engage with peers, when it is appropriate to leave their seats, when and how to turn in their work, and when and how to get a drink of water (Wong, 2012; Sprick, 2009). Effective classroom teachers establish consistency in their classroom at the beginning of the school year by establishing rules and procedures early on (McLeskey et al., 2017). Rules and procedures should be firm, fair, and created with students' aide (Malone & Tietjens, 2000). "Student participation in rule-making encourages active involvement, ownership, reflection, meaningful connection, respect for rules, a sense of community, and problem-solving through negotiation," (Malone & Tietjens, 2000, p. 160).

Remember the 4:1 ratio

To build and maintain positive relationships with students, educators should focus on positive and appropriate behaviors to encourage master of social and behavioral goals (McLeskey et al., 2017). "The conventional recommended ratio found in the professional literature is for every corrective statement a teacher makes, educators should look for at least four opportunities to acknowledge appropriate behavior" (McLeskey et al., 2017, p. 56). Research has indicated that behavior-specific praise increases positive student behaviors compared to general praise statements (Chalk & Bizo, 2004; Eaves et al., 2020). Students who receive behavior-specific praise demonstrate higher levels of on-task behavior and academically engaged behavior (Eaves et al., 2020).

Culturally Responsive Teaching
Part of being a caring and respectful teacher includes being a culturally responsive teacher (McLeskey et al., 2017). Culturally responsive teaching refers to validating and affirming students' culture through cultural knowledge, prior experiences, and knowledge of performance style differences in ethnically diverse students to create meaningful and productive learning encounters (Gay, 2018; Hollie, 2019). Instruction should provide content relevant to student's cultures and experiences (Aronson & Laughter, 2016).

HLP 8: Provide positive and constructive feedback to guide students' learning and behavior
This HLP is listed twice in *High-Leverage Practices in Special Education*: once under the Social/Emotional/Behavior research synthesis and again under the Instruction research synthesis (McLeskey et al., 2017). Instructors must provide specific, positive feedback across social and academic activities. According to Doabler et al. (2016), modified feedback for students with disabilities includes:

"(a)Focusing feedback on the targeted concept for skill rather than grammar, syntax, or pronunciation; (b) remodeling the targeted concept for skill with visual representations (e.g., counting blocks); (d) using clear and comprehensible language; and (d) offering follow-up questions that allow ELs to build upon their previous responses," (p. 309).

This HLP is not limited to verbal feedback; nonverbal or written feedback is appropriate when it is positive and constructive. The positive feedback should reinforce the specific social behavior goals of the student. The desired behavior should be followed by specific praise to be effective (Eaves et al., 2010). Special educators should use feedback as a form of extrinsic motivation as students with disabilities work towards self-regulation (McLeskey et al., 2017).

HLP 9: Teach social behaviors
The first part of this HLP reads, "Teachers should explicitly teach appropriate interpersonal skills, including communication, and self-management, aligning lessons with classroom and schoolwide expectations for student behavior," (McLeskey et al., 2017, p. 56). This HLP is broad and includes many evidence-based practices. For example, explicit instruction is an evidence-based practice and an HLP; many students with disabilities, especially students with ASD and ID, require explicit instruction to learn new social behaviors. This instruction on social behaviors should occur daily to be most effective (McLeskey et al., 2017).

Determine the student's social skill challenges
One method of determining student social skill needs and challenges is to utilize a social skill checklist. While there are many social skill checklists available online, educators should collaborate with their school psychologist or behavior specialist to determine what tool is most appropriate for use as a formative assessment to help guide instruction.

Explicitly teach interpersonal skills
Explicit instruction is an effective strategy to teach social skills. Critical components of using explicit instruction include a clear explanation or model of the task, guidance through the application of the skill, and then opportunities for independent practice until the student demonstrates mastery of the concept (McLeskey et al., 2017).

Focus on communication skills
Educators need to teach communication skills that go beyond functional communication. For students with intellectual disability or autism, educators should provide students with opportunities to interact with other students and develop social communication skills. For students with more significant needs, the Picture Exchange Communication System (PECS) has been identified as an EBP by the National Professional Development Center on Autism Spectrum Disorder (2014). Educators should maintain high expectations for students to develop communication skills and provide assistive technology for students who need that level of support.

HLP 10: Conduct functional behavioral assessments to develop individual student behavior support plans
The use of functional behavioral assessments (FBAs) is considered an HLP and an EBP (McLeskey et al., 2017; Collins & Zirkel, 2017; Kern et al., 2004). Research has demonstrated that interventions based on an FBA are more effective in reducing aversive behavior than interventions that are not function-based (McLeskey et al. 2017; Gage et al., 2012). Providing behavior shaping interventions is imperative for students with challenging behaviors to continue to receive instruction while maintaining placement in their classroom setting (Collins & Zirkel, 2017).

Per IDEA regulations, functional behavior assessments (FBAs) must be conducted to determine whether a student's behavior conduct is a manifestation of the student's disability (IDEA, 2004). This meeting must occur either when a student with a disability receives out of school suspensions for 10 days or more or upon a disciplinary change of placement (IDEA, 2004). While the IDEA does not provide specific regulations or procedures for conducting an FBA or how to complete an FBA, research has identified several best practices for completing an FBA. For example, research recommends that schools utilize a team-based approach to assess and address student behavior (Collins & Zirkel, 2017; Scott et al., 2008). This team should be individualized for each student and include the classroom teacher or academic specialist, a behavior specialist, an administrator, and the student when appropriate (Collins & Zirkel, 2017; Scott et al., 2008). This team should clearly define the behavior and identify the antecedents for the behaviors, consequences, and environmental stimuli that may trigger behaviors (Collins & Zirkel, 2017; Scott et al., 2008). Furthermore, school districts should provide training for educators and paraprofessionals on how to participate in the FBA process and implement the behavior intervention plan (BIP; Collins & Zirkel, 2017; Scott et al., 2008).

Table 2

Resources for Social-Emotional Learning and High-Leverage Practices

Resource	Website	Summary
CASEL	https://casel.org/	CASEL is the leading organization for dissemination research and best practices for implementing social-emotional learning.
Committee for Children	https://www.cfchildren.org/	The Committee for Children offers educators resources for implementing social-emotional learning strategies in their classroom. They are also involved with policy and advocacy to promote more social-emotional learning in schools.
Council for Children with Behavioral Disorders (CCBD)	http://www.ccbd.net/home	CCBD is the division of CEC that focuses on students with emotional-behavioral disorders or any other behavioral disorder. Their newsletter, publications, and other educator resources often have a focus on social-emotional learning.
CEC High-Leverage Practices	https://highleveragepractices.org/	The official HLP website has many resources, including videos, books, and webinars.
CEEDAR High-Leverage Practices	https://ceedar.education.ufl.edu/high-leverage-practices/	CEEDAR provides technical assistance for implementing HLPs. Their website has a free .pdf download of the High-Leverage Practices in Special Education by McKlesky et al. 2017.
What Works Clearinghouse	https://ies.ed.gov/ncee/wwc/	WWC is managed by the Institute of Education Sciences and provides comprehensive lists of evidence-based practices on a range of topics, including behavior and students with disabilities.

Conclusion

In conclusion, educators should remain current with best practices that are backed by research. The creation of HLPs by CEC and CEEDAR demonstrates the value for educators to be involved with their professional organization. Professional organizations are at the forefront of research in their respective fields, and many offer educators resources to implement within their classrooms. Table 2 provided a list of resources for SEL and HLPs. "The goal in providing HLPs in special education is to improve teacher preparation, with the ultimate goal to increase outcomes of success for any student struggling in school," (McLesky, J., et al., 2017, p. 11). As educators continue to learn about and implement the HLPs, they will see continued academic and social-emotional growth in their students with ASD and ID.

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Applied Behavior Analysis in Today's Schools: An Imperative for Serving Students with Autism Spectrum Disorder

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Abstract: There is growing evidence regarding the usefulness of ABA-based practices that serve as educational interventions for autism spectrum disorder and federal mandates which require educators to use evidence-based practices to improve academic and/or behavior outcomes. Students with ASD present challenging behaviors, yet ABA-based interventions are effective in reducing these problem behaviors to a level where children with ASD can often be educated with their typical peers. However, there has been some reluctance by public school systems to adopt ABA-based education interventions. The purpose of this article is to explore challenges and offer recommendations to enhance current special education teacher education programs (SETEPs) by incorporating ABA, given their significant responsibility to prepare teachers to work with students with ASD and other neurodevelopmental disabilities. In addition, suggestions for schools and ABA service agencies will be explored. Specifically, considerations are offered in the areas of evidence-based practices, related service providers, and policies to promote interagency collaboration.

ASD is a disorder with complex atypical behavioral patterns that are different for each child and range from those who are high functioning to those who are severely affected (Keenan et al., 2010). About one in 59 children has been identified with autism spectrum disorder (ASD) according to estimates from CDC's Autism and Developmental Disabilities Monitoring (ADDM) Network (Baio et al., 2018). The estimated lifetime cost for an individual with ASD is US$3.2 to US$4.0 million, including cost for care and lost productivity (Ganz, 2006).

Over the past 40 years, interventions based on the science of Applied Behavior Analysis (ABA) have been highly effective in mitigating some of the challenges and developing adaptive and social behaviors in many populations (Swanson & Sachse-Lee, 2000) and are now internationally recognized as the most effective basis for treatment for children with ASD (Dillenburger et al., 2010, 2012; Larsson, 2005). The term ABA intervention refers to treatment approaches that are implemented systematically following the principles of applied behavior analysis, are applied as early as possible in the child's life, are usually provided in a student-teacher ratio of one-to-one, are individualized, comprehensive, and target a great number of skills, and are used in conjunction with parent-education services (Virues-Ortega, 2010).

There is growing evidence regarding the usefulness of such innovative ABA-based practices that serve as educational interventions for autism (Stahmer, 2007) and federal mandates which require educators to use evidence-based practices to improve

academic and/or behavior outcomes. Under the Least Restrictive Environment clause of Individuals with Disabilities Education Improvement Act (IDEA, 2004), students with disabilities are to be educated with their nondisabled peers, to the greatest appropriate extent. Students with ASD often present challenging behaviors that hamper the effective implementation of the least restrictive clause; however, ABA-based interventions are effective in reducing these problem behaviors to a level where children with ASD can often be educated with their nondisabled, typical peers (Eapen et al., 2013). However, there has been some reluctance by public school systems to adopt ABA-based education interventions (Stahmer et al., 2005). Research suggests that public school administrators' lack of specific training on the needs of students with autism, financial restraints, and the lack of sufficient numbers of qualified ABA professionals, teachers, and support for paraprofessional staff hamper the adoption of ABA-based programs in public schools (Boe et al., 2008).

As the number of children diagnosed with ASD increases, a pressing educational challenge facing colleges of teacher preparation in the U.S. is to ensure educators not only are prepared to include these students, but also are trained to teach them effectively and according to grade level standards (Loiacono & Valenti, 2010). Although it is highly probable that both general and special educators will encounter students with ASD in their classrooms, most teacher graduates receive minimal to no preparation in evidence-based practices such as ABA for students diagnosed with ASD, being prepared through a single introductory course as general education majors or other courses centered on strategies and accommodations to address a variety of disabilities as special education majors (Morrier et al., 2011). It is therefore not

surprising to find that teachers rarely employ evidence-based instructional strategies such as ABA with students with ASD and other disabilities (Hess et al., 2008).

The purpose of this article is to explore challenges and offer recommendations to enhance current special education teacher education programs (SETPPs) by incorporating ABA, given their significant responsibility to prepare teachers to work with students with ASD and other neurodevelopmental disabilities. In addition, suggestions for schools and ABA service agencies will be explored. Specifically, considerations can be made in the areas of evidence-based practices, related service providers, and policies to promote interagency collaboration.

Recommendations to Enhance Current SETPPs
SETPPs are uniquely qualified to take a leadership role to address the lack of specific teacher training for students with ASD. To do so, SETTPs can focus on systematically integrating ABA theory and strategies within the general and special education teacher preparation programs, particularly in course work and experiences related to communication, socialization, and behavior. To start, SETTP faculty should work with their colleagues across the college to ascertain special and general education preservice candidate's knowledge of ASD as well as faculty knowledge of ASD and accompanying evidence-based practices (e.g., ABA) to support such students. Content from the Registered Behavior Technician (RBT) training task list could be utilized as a basis for this informal assessment. The skills described in the RBT task list are the initial skills that are mandated for a professional to work, with supervision, in a one-on-one setting for students with ASD. This task list describes initial behavioral principles that are

tested to receive the RBT credential (see https://www.bacb.com/wp-content/uploads/2020/05/RBT-2nd-Edition-Task-List_181214.pdf). In addition, many colleges of education offer master's degrees in ABA leading to BCBA certification, and components of these programs could be incorporated as part of teacher preparation with targeted collaborations between faculty working at the undergraduate and graduate levels.

As part of the process of embedding ASD-specific content in the curriculum, SETTPs can help to bridge the communication gap between ABA providers and schools by helping pre-service teachers in both special and general education programs understand and utilize common language to describe interventions (Cihon et al., 2016). The RBT task list includes terms to describe behavior interventions specific to the ABA field. Schools and community-based professionals may be implementing similar interventions, but may describe the interventions using related, but different terminology. Translating ABA terms to educational terms (and vice versa) may enable teacher educators to provide foundational knowledge for teacher candidates prior to the entry to the field. Additionally, identifying practices in schools that are based in ABA can lead to increased communication and understanding for all stakeholders. See Table 1 for ABA-specific terms that may be used in schools but with which teachers may have limited familiarity.

Evidence Based Practices
Many of the evidence-practices in special education have their beginnings in applied behavior analysis. For example, one prominent application of ABA in schools is Response to Intervention (RtI), which is a widely used, decision-making framework for preventing and addressing a variety of academic and behavioral challenges (Tilly, 2008). RtI shares key elements of ABA including direct measurement of behavior, interventions designed to produce significant improvements, and ongoing progress monitoring to assess acquisition, maintenance, and generalization of target skills (Fuchs & Fuchs, 2006). Other examples of techniques in use that are ABA-rooted include examination of data to make individualized changes in intervention, functional behavioral assessment, and direct instruction methods. Therefore, it is logical and appropriate to seeks ways to formally embed ABA-based approaches into existing programming to benefit students and their teachers. Other examples of techniques in use that are ABA-rooted and have good classroom application include peer-mediated instruction, visual schedules, and priming. Each is defined and operationalized for teaching implementation below.

Use Peer Mediated Instruction (PMI). Using other students as models, or peer-mediated instruction, is a useful strategy. Peer-mediated instruction is an evidence-based practice for teaching social skills to individuals (Reichow & Volkmar, 2010). PMI uses typically developing peers to interact with and help learners with ASD acquire social skills through interaction opportunities within classroom environments. Peers are systematically taught to engage learners with ASD socially in both teacher-directed and learner-initiated activities (Carter et al., 2012) and, in turn, peers and individuals with ASD are then given opportunities to engage in social interactions (McConnell, 2002).

Social skills targeted in PMI include the following: responding to others, reciprocity, interacting with others or in groups, organizing play, offering, giving, or accepting a play material to/from focal child,

Table 1. *Sample ABA Terms with Application to School-Based Settings*

ABC	Antecedent–Behavior–Consequence. Describes the three-term contingency of all behavior.
backward chaining	A method of instruction used to teach tasks such as building puzzles and singing songs. For example, to teach a child to sing a song, you would first leave out one word for the child to produce, for example, "Twinkle, Twinkle, Little _____." Once the child can sing "Star," you can leave out two words to make the child to sing "Little star," and so on.
baseline	Observation period in which data are collected before any new intervention is started.
Discrete-Trial Teaching	Three-term contingency (A–B–C) used to teach skills. Each separate trial is used to teach a new skill.
errorless teaching	A technique used to prevent or reduce errors. A prompt is provided immediately after the direction is given or question is asked and then that prompt is faded.
extinction	Reinforcement that is provided for problem behavior (often unintentionally) is discontinued in order to decrease or eliminate occurrences of problem behaviors.
intraverbal	Filling in blanks or answering WH questions; responding to other's verbal behavior with no visual or other stimuli present.
mand	A request for an object, action, attention, or information
prompt	A cue to aid the student to make the correct response. A prompt should be part of the antecedent condition and added before the learner has a chance to respond.
reinforcement	A positive or negative consequence following a behavior that increases the probability that the behavior will increase in the future.
tact	Labeling or naming sensory nonverbal stimuli such as an object, picture, adjective, location, smell, taste, noise, or emotion
task analysis	A breakdown of a skill which involves multiple steps used to identify and teach problematic steps in the sequence.
verbal behavior	Any communication involving a listener including speaking, signing, exchanging pictures, pointing, writing, typing, gesturing, etc. Also includes crying or displaying other negative behaviors to obtain attention or tangibles, or to escape unwanted activities.

Adapted from: Barbera & Rasmussen (2007).

or providing assistance. In practical terms, you may select one of the peers to act as the peer model by giving that peer tasks such as holding all the crayons and waiting for your student to ask for one. Or, if you give an instruction and the student with ASD doesn't respond, have a peer repeat the instruction and/or get that student instead of the teacher or aide. For a detailed list of steps for developing PMIs, including how to select and

train peers, prepare the materials and settings, as well as administer the intervention and

collect data, see https://vkc.mc.vanderbilt.edu/assets/files/resources/psiPeermedstrategies.pdf.

Use Visual Cues/Schedules. Visual cues are physical representations of content with concrete characteristics such as pictures to show which activities will occur and in what sequence. Visual schedules are a type of visual prompt used to help individuals on the autism spectrum predict or understand upcoming events (see https://www.unl.edu/asdnetwork/images/Vis

ualSupports.pdf.) Visual supports help the learner maintain attention to the task, clarify expectations, and encourage participation.

A visual schedule can be created using photographs, pictures, written words, physical objects or any combination of these items, which can then enhance comprehension (Miranda & Erikson, 2000). Instead of verbally reminding students, they can be directed back to their schedule, thereby removing the need for constant reminders. A visual schedule can always be adapted to be age and developmentally appropriate for each student. While a younger student can use pictures, an older student can use a text-based to-do list. Visual schedules can be used to promote transition between routines (such as moving from a classroom to a lunch setting) or within the student's daily activity routines (such as moving from group discussion to independent work). A variety of behavioral techniques (prompts and/or praise and rewards) can be used to encourage the student to use the schedule. Over time, the support provided can be faded so that students are able to use the schedules independently.

Use Priming. Priming is another useful ABA strategy that can be applied in a classroom. Priming permits the student to be exposed to the new content in a context free of the pressure to perform and links individual instruction to the larger group activities typical of the mainstream setting (Hart & Whalon, 2008). If you have a student that has difficulty in a specific content area, request the materials beforehand so that you can pre-teach or prime some of the content. In this way, when the teacher teaches the content during class, it will be easier for the student with ASD to attend to and follow the instructions in a group. This prior exposure promotes engagement while simultaneously decreasing disruptive behavior, and levels the academic playing field. Priming can even provide the child with ASD an opportunity to assume the expert role when the content is introduced to the class as a whole (Werner et al., 2006).

SETEPs can work with coordinators and faculty in general education programs to identify existing courses in which to embed ABA content such as the aforementioned evidence-based practices. One place that might be a natural fit would be the content methods courses that are provided in the general education program. While these courses tend to focus on specific core subjects of study, strategies for teaching within these subjects are typically addressed. Faculty should work together to identify evidence-based practices in ABA that could support not only students with ASD, but also all students in the classroom (e.g., positive reinforcement), and across courses focused on learning, socialization behavior, and communication. Such preparation will then enable teacher candidates to develop awareness of the approaches that will be a part of the programming of the students with ASD they will likely encounter in schools.

Leveraging Related Service Providers
The IDEA (2004) requires that schools provide related services such as speech, occupational and physical therapy as well as others for students who may require additional support to access the general education curriculum. By collaborating with faculty in training programs for related services providers as well as working directly with related service providers in the schools, principles of ABA can be used to address academic and behavioral concerns. Related service providers may have specialized skills in identifying target behaviors, directly measuring these behaviors, and specific strategies to help students make progress—all tenets of ABA.

Specifically, school psychologist preparation programs represent a possible collaboration with SETTPs. School psychologists are trained to deliver intervention services to children through consultation with teachers (Sanetti et al., 2015); as such, these team members are in a prime position to intervene with students who struggle behaviorally and academically and possess an in-depth understanding of functional assessment. Consultation between general and special education teachers and school psychologists is commonly implemented in the provision of psychoeducational services to students (Kratochwill, 2008). Although variability exist across consultation models, consultation is a key element of the multi-tiered systems of support for delivering academic and behavioral interventions in schools (Knotek, 2007; National Association of State Directors of Special Education, 2008).

However, many teachers struggle to deliver interventions consistently (Noell et al., 2005). Research indicates the majority of teacher consultees do not implement classroom-based interventions with sufficient fidelity for more than 10 days when systematic consultative support is absent (Sanetti et al., 2015). Adequate treatment integrity and quality is necessary for evidence-based interventions to positively impact student outcomes (Biggs et al., 2008; Goncy et al., 2014). There is a pressing need for effective strategies to facilitate teachers' intervention implementation (Sanetti et al., 2015). This process could begin sooner if training for school psychologists and teachers became more interdisciplinary and the roles of each provider were redefined, with a focus on a more inclusive approaches to assessment, intervention planning, and implementation.

Interagency Collaboration

Currently there is a disconnect between education-based and medically-based services for students with ASD. The current educational focus requires access to the general education curriculum, while the medical model mandates medically necessary services. Each larger service provider, (i.e. school and clinic) is funded by different sources. In the meantime, policies meant for the protection and growth of students with ASD may not have the intended effect. Currently 46 states and the district of Columbia require that insurance companies cover autism-related services (National Conference of State Legislatures, 2018). Concern has been raised that these rates will continue to increase. To compound this issue, several states have considered expanding legislation to allow schools to bill insurance companies for ABA services. At the same time, there are often school policies in place that restrict the provision of clinical services in school, some resistance to adopt ABA-based interventions (Boe et al., 2008; Stahmer et al., 2005), and educator reports of minimal training in classroom management from behavioral consultants (Stough et al, 2015).

Although Board Certified Behavior Analysts (BCBAs) are the primary professionals with expertise in ABA (Zodell-Martellet al., 2017) and who provide direct consultative services to children exhibiting challenges with behavior and communication (Putnam & Kincaid, 2015), their fundamental skill set is not currently implemented in an integrated manner in schools, which may relate to the history of a gap that has existed between research and practice in the delivery of mental health services in schools (Maras et al., 2014). However, the inclusion of BCBAs in the school environment would meet IDEA's mandate for evidence-based practices for students with ASD, specially, ABA approaches (Lewis et al., 2017).

Moreover, BCBAs could effectively support, evaluate, and provide feedback on teachers' implementation of commonly related ABA-specific approaches such as functional assessment (Putnam & Kincaid, 2015).

As both medical and clinical providers are experiencing shortages of qualified personnel, SETTPs can work with legislators at the state level to create policies that reduce barriers and incentivize communication and collaboration among providers. Considerations could include the following: 1) promote BCBAs and RBTs access to school settings to leverage behavioral services and promote generalization, 2) examine billing-related issues to providing clinical ABA services in school settings, 3) fund additional training and early intervention services to prevent/reduce the need for intensive services as children get older. By considering a wrap-around method between schools and ABA providers, communication can be increased, providing a more cohesive and comprehensive approach to service provision. SETTPs can initiate collaborative discussions that assist the broader community of professionals, policy makers, and families in understanding the larger context in which services are provided, and the need for increased access to the evidence-based practices that ABA provides students with ASD.

Conclusion

To date, there is little research to guide how to effectively deliver school-based ABA; moreover, the field has yet to comprehensively address the most effective ways for behavior analysts and school personnel to collaborate in their implementation of ABA as they seek to meet the needs of students with ASD successfully. Nonetheless, there is growing evidence pointing to the usefulness of ABA-based approaches that serve as educational interventions for students with ASD (Stahmer, 2007) and federal mandates (i.e., IDEA) which require educators to use evidence-based practices to improve academic and/or behavioral outcomes.

Policies and procedures at the teacher preparation, school and community level can create barriers for providers as they seek to successfully implement effective, evidence-based practices. SETTPs typically promote collaborative approaches to service provision and are uniquely situated to understand the larger context in which students with ASD receive services. By reconceptualizing current roles and ways in which we prepare our teachers, we can model an interdisciplinary approach that capitalizes on the skills and knowledge of all related providers. Doing so has the potential to inform a variety of school and outside professionals who share a vested interest in improving long-term outcomes for the growing numbers of students with ASD.

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Statewide Implementation and Scale-Up of Evidence Based Practices for Autism in Education: From Sea to Shining Sea

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Abstract: Although evidence-based practices (EBPs) for autism exist, challenges occur when implementing them in schools. Efforts are taking place nationwide to integrate EBPs into classrooms and bring them to scale. Using an implementation science framework, examples from North Carolina and California will be shared, including facilitators and barriers encountered and lessons learned. Implications for additional cross-state collaboration and future research will also be discussed.

With the explosion in cases of autism spectrum disorders (ASD) over the past twenty years, the demand on public education systems to quickly develop the scope and quality of school services available to address the needs of this growing population of students has increased considerably. This increased demand for high-quality programs and services resulted in the need for better methods of training educators in the use of evidence-based practices (EBPs). The most recent estimates from the Centers for Disease Control indicate 1 in 54 children are affected by ASD (Baio et al., 2018). This means the number of children with this diagnosis served by public schools has grown six-fold- from 93,000 in 2000 to 576,000 in 2015-across the last two decades (Kena et al., 2015).

Several systematic reviews have been completed to identify EBPs for ASD (National Autism Center, 2009, 2015; Odom et al., 2010; Wong et al., 2014; Steinbrenner et al., 2020). The National Standards Project (NSP) identified 11 categories of interventions as "established," and the National Clearinghouse on Autism Evidence and Practice (NCAEP) identified 28 focused intervention practices for ASD (National Autism Center, 2009; NPDC, 2014; NCAEP, 2020). These independent reviews had overlap in their respective findings, indicating strong support for efficacious interventions for ASD. The findings made a significant contribution toward overall dissemination of EBPs for ASD; however, the limited information on school-based use indicates EBPs for ASD may not be easily integrated into educational programs (Hess et al., 2008; Morrier et al., 2011; Stahmer & Ingersoll, 2004; Suhrheinrich, 2011) or, when used, are implemented with limited fidelity (Suhrheinrich et al., 2013; Suhrheinrich et al., 2007).

In response to this gap, there have been urgent calls for the development and testing of implementation interventions to facilitate

successful uptake and sustained delivery of EBPs for ASD in schools and community programs. Both the Interagency Autism Coordinating Committee Strategic Plan for ASD Research (2013) and the Institute of Educational Sciences (IES) prioritized identifying and targeting mechanisms of successful EBP implementation to maximize public health impact.

Multiple factors support successful implementation across providers, organizations and systems levels. For example, research indicates that successful training in the use of EBPs requires both didactic information and competency training (Joyce & Showers, 2002). Information sharing, or basic workshop training, is *not* enough to result in implementation, but incorporating coaching, performance feedback, program evaluation, facilitative administrative practices, and methods for systems interventions increase the likelihood of successful uptake of EBP within community programs significantly (Fixsen et al., 2005). Beyond initial implementation of EBP, scaling up interventions across multiple school sites, districts, and regions presents an additional challenge. Most state-wide systems have very limited capacity for scaling up interventions in ways that lead to meaningful improvements in outcomes for students (Fixsen et al., 2013), indicating a clear need for continued development and resource sharing in this area.

Aims

The purpose of this paper is to describe how two states on opposite coasts have begun to address the need for EBP training and use within public education using implementation science frameworks. In each location, implementation science has provided a framework for exploration, preparation/planning, implementation and sustainment/scaling to take place. Using the implementation science framework, we will share our journeys as purveyors of these statewide efforts thus far and provide readers with an opportunity to draw from our experiences with EBP implementation. In addition to the descriptions of implementation activities, we will outline the various facilitators and barriers we have encountered through examples and data using qualitative and quantitative methods.

Method

Exploration

In California, exploration began in 2006 with the development of a Legislative Blue Ribbon Commission (BRC) on Autism. This appointed group of stakeholders from across the state was charged with identifying the challenges being encountered as a result of the rapid increases in ASD diagnoses. Furthermore, they were asked to explore solutions and develop recommendations for overcoming these challenges. Over the course of 12 months of facilitated stakeholder meetings, the BRC developed recommendations that were published in 2007 in a report titled *The California Legislative Blue Ribbon Commission on Autism report: an opportunity to achieve real change for Californians with autism spectrum disorders.* This report provided a blueprint for California to follow for the next several years that outlined the key issues and possible solutions to these challenges. Some of the key recommendations from the BRC included: 1) Identifying and using an agreed upon set of evidence based practices across service systems, 2) Develop a clearinghouse/website where providers and families could go to access vetted information and resources, 3) Develop a plan for systematically training educators in the K-12 system how to use the EBPs effectively, and 4) Develop cross agency memorandum of understanding and/or interagency

agreements to seamlessly support families through service transitions that occur at age 3 and at age 22.

In North Carolina, in response to the growing population of students with ASD, the Department of Public Instruction (DPI) recognized the need for increased support within public education. In 2006, the state increased staffing by adding Statewide Consultants for Autism. Subsequently, the consultants conducted stakeholder groups, completed observations, and analyzed data to explore the context and root causes for the unique challenges to providing appropriate educational services for students with ASD. A review of existing literature related to EBPs, principles of adult learning, and system's change was conducted. Possible solutions were considered relative to the existing structures, supports, and available resources at the local, district, and state level. The complexity of the solutions made it evident that a statewide blueprint was needed to organize this work.

Preparation/Planning
In 2008, California began to execute the blueprint and recommendations of the BRC by forming an interagency autism planning group (IAPG) made up of stakeholders from the field of education, universities, developmental disabilities services, and family support agencies. The IAPG made plans, identified resources, and leveraged support to begin implementation efforts. Due to economic downturn, funding dedicated to the efforts to apply the BRC recommendations was limited, so it was critical to make use of existing resources and establish a grassroots effort through in-kind support from participating agencies. The IAPG spent the 2008-2009 school year developing and refining the implementation plans. By the end of the initial development phase, the IAPG made the initial goal to

identify and train educators in the proper use of a set of validated EBPs. It was at this time that the IAPG was made aware of the National Professional Development Center of Autism Spectrum Disorders (NPDC-ASD) project through the University of North Carolina at Chapel Hill. In 2009, the IAPG applied for and was awarded two years of training and technical assistance through the NPDC-ASD. Funded by the Office of Special Education Programs, this implementation project provided an established set of EBPs, training tools and resources including online learning modules and fidelity checklists, and a model for California to use as we began our initial implementation work (Wong, 2014). California was awarded this training and technical assistance grant for school years 2010-2011 and 2011-2012.

Preparation and planning in North Carolina began in 2006. A small funding pool was made accessible to school districts for the purpose of increasing capacity for serving students with ASD. Through that resource, many school systems installed autism teams to develop an organizational infrastructure to support the initiative. An extensive professional learning plan was developed with consideration of the need for supports, such as coaching to increase classroom implementation of content. During the planning stage, collaborations were initiated with external partners with a focus on collective impact, including contracting with TEACCH at the University of North Carolina Chapel Hill to create and co-deliver foundational autism training. Throughout the implementation process, a continuous plan-do-study-act cycle led to revisions. Stakeholder feedback was gathered with a particular focus on input from educators and Exceptional Children's Directors revealing differences in infrastructure, local funding, and personnel. Based on that information and in recognition of the varying levels of

readiness of school districts across the state a multi-tiered support plan was created. This plan allowed all systems the flexibility to choose the level of support needed to address their capacity building with options for accessing professional learning or creating infrastructures to pair professional learning with ongoing support for increased classroom implementation. In 2017, the implementation team revisited the effectiveness of the initiative, resulting in planning a more targeted approach launched at four usability sites, "model sites." The planning and preparation for this iteration of the initiative more intentionally addressed readiness in terms of implementation drivers, use of data sources and fidelity tools, and a more comprehensive approach to installation of the coaching component.

Implementation

Beginning in September of 2010, California implemented their training and technical assistance model (Figure 1) in six "demonstration sites" over the course of the 2010-2011 and 2011-2012 school years (see Figure 1). The "demonstration sites" each applied for the training and technical assistance offered through the project using an application established by the IAPG. Programs earned points for having existing infrastructure in place that would support immediate implementation of training and coaching practices outlined in the NPDC-ASD protocol. In an effort to learn how the model could be used in a variety of contexts, the IAPG selected programs from across the grade levels and across the spectrum of student needs. After a successful two-year partnership with the NPDC-ASD and outcomes indicating that the model was effective, feasible and also a good fit for California, the IAPG began making plans to further disseminate the model beyond the original "demonstration sites."

The California Autism Professional Training and Information Network (CAPTAIN) was established following the two-year project to scale up the NPDC-ASD model and train trainers across a massive and diverse state. This was accomplished by working with intermediary entities, including the Special Education Local Plan Areas (SELPAs), Regional Developmental Disabilities Centers (RCs) and Family Resource and Empowerment Centers (FRC/FEC). These intermediary groups selected individuals to become trainers for CAPTAIN (called CAPTAIN Cadre). Criterion to become a trainer included: 1) Prior knowledge of and training in Autism and related EBPs, 2) Demonstrated ability to provide high quality training and coaching, and 3) Ability within their job role/function to provide the required training and coaching to at least 3 programs/teachers per year. CAPTAIN leaders, who were all members of the IAPG and/or were staff members from the six NPDC – ASD demonstration sites provided training and technical assistance to help newly appointed trainers learn the NPDC-ASD model and proper usage of their resources including the online learning modules and fidelity checklists. CAPTAIN leaders also provided training to new Cadre in the NPDC-ASD coaching methods and practices as outlined in the NPDC-ASD Coaching Manual (Kucharczyk, 2012). The initial training for Cadre members was conducted at an annual CAPTAIN 2-Day summit with ongoing support provided through local collaborations and quarterly meetings. In order to house all of the EBP training resources, CAPTAIN worked with the California Department of Education (CDE) to develop a website that would become the clearinghouse for ASD-EBPs for the state of California (www.captain.ca.gov). This website has links to vetting resources and information about how districts can receive EBP support through CAPTAIN.

Figure 1
National Professional Development Center Model
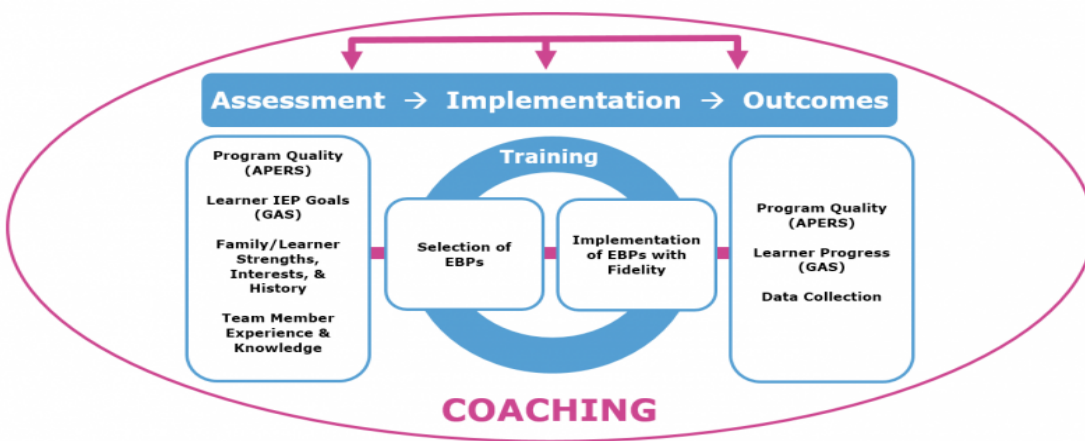
Similar to California, a primary goal in North Carolina was to increase educators' implementation of EBPs in order to improve services and outcomes for students with ASD. In 2015, a professional learning plan was implemented that provided foundational knowledge and skills. Initial content provided by state consultants in collaboration with external partners focused on antecedent based intervention, visual supports, and self-management, while leveraging available online content for a broader array of EBPs through Autism Focused Intervention Resources and Modules (AFIRM). Through ongoing needs assessment, trainings were added to address foundational concepts of communication including augmentative and alternative communication and behavior analytic instruction which addresses task-analysis, prompting, and reinforcement within a context of standards aligned explicit instruction. Workshops incorporated multiple methods of delivery, including didactic training, modeling, and practice with feedback. Although fidelity tools were shared with training participants and autism teams, the initiative lacked a plan for systematic use of fidelity instruments. The model sites component of the framework includes an accountability component for measurement of fidelity that can inform the larger project moving forward.

Concurrently, the existing autism teams from school systems across the state were trained in effective teaming, strategic planning, and methods to provide ongoing support, in order to address the theory-to-practice gap. While continuing to support the breadth of training needs across the state, a comprehensive pilot began in 2017 in four school districts that included more intentional delineation and application of program evaluation, data analysis, assessment of organizational, leadership, and competency drivers. Within the revised framework, accountability mechanisms include an array of tools to ensure fidelity of implementation.

Scale Up/Sustainment
Scaling up the use of evidence-based practices involves a conscious and systematic endeavor to bring these practices to more and more students, districts and implementers. According to Fixen et al. (2009), scale occurs when 60% or more of students who could benefit from an innovation are experiencing that innovation in their educational setting

(Fixen et.al., 2009). In California, CAPTAIN has been training and supporting its Cadre, since October 2013. Presently, there are 412 active cadre members from three primary agencies (SELPAs – 93% participation, RCs – 100% participation, and FRC/FECs) who disseminate information on ASD and EBPs, conduct local trainings, provide implementation coaching for teachers, and work within regional implementation teams to support the use of EBPs across California (Table 1). Cadre members have annual training and coaching requirements that they must fulfill to remain members in good standing. All Cadre convene annually for updated training and regional teams meet quarterly to share resources and implement regional plans. Cadre are supported with funding by their agencies for their participation in CAPTAIN related activities. The CAPTAIN leadership team provides regional support and holds an annual CAPTAIN Summit where new policy and practice are shared with the Cadre. Due to inevitable attrition, new Cadre are identified and trained annually at "Bootcamp", which takes place prior to the yearly summit. This orientation training allows new Cadre to learn about the NPDC-ASD model and pick up tips from more experienced Cadre on how to carry out their training and coaching requirements. New Cadre receive ongoing support through contact with veteran Cadre within their region.

Throughout the implementation process in North Carolina, consideration has been given to sustainability and scale up. The foundational professional learning offerings are available annually, with new content development providing access to a wider range of EBPs each year. As previously discussed, the state support plan provides districts the opportunity to select a level of support. General support provides access to funding to support professional learning access. 169 school systems are currently accessing support through the statewide framework (Table 2), which represents 80% of the state. Of those 99, or nearly 70% having an autism support team established. These teams will continue to provide ongoing support within their LEAs. Many of those teams are growing in their capacity to provide effective professional learning at the local level. The teaming structure aspect of the model is already scaled up, as it is available to all school systems in the state. The model site component, currently installed in four school systems will be scaled up to provide for one model site in each of the eight educational regions in the state. The model site teams are being trained in effective design and delivery of professional learning to adult learners, which will increase the number of people able to provide professional learning and support across the state. This trainer of trainer's aspect will

Table 1
CAPTAIN Cadre Member Numbers 2014 to Present

	2014	**2015**	**2016**	**2017**	**2018**	**2019**
RC Cadre	40	53	55	47	49	51
SELPA Cadre	326	303	376	360	339	333
FRC FEC Cadre	17	15	19	19	20	22
Total Cadre	**383**	**371**	**450**	**426**	**408**	**412**

Table 2
North Carolina LEAs Accessing Statewide Support

	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020
Autism Support Teams	103	109	128	102	99
General Support	N/A	N/A	N/A	34	66
Model Sites	N/A	N/A	N/A	4	4
Total LEAs	**103**	**109**	**128**	**140**	**169**

support the sustainability and scale-up of the model at large.

Results
Identified Facilitators and Barriers

In California, part of our continuous improvement cycles involves the implementation of an annual cadre member survey, which asks questions related to their needs, outputs, impacts, and the facilitators and barriers they face. This annual survey has provided us with invaluable information for ongoing improvement of our model. Figure 2 outlines the identified barriers cadre reported encountering the most during the 2018-2019 school year.

In response to the identified barriers, CAPTAIN leaders and their Cadre are now required to meet annually with agency directors to review the perceived barriers and the training and coaching plans for each agency. It is during these meetings that often systems level changes are suggested to help improve barriers such as staff time/availability to provide training and coaching as well as methods for securing release time and subs. Agency leaders also

Figure 2
Barriers Reported by CAPTAIN Cadre Related to Training and Coaching Efforts
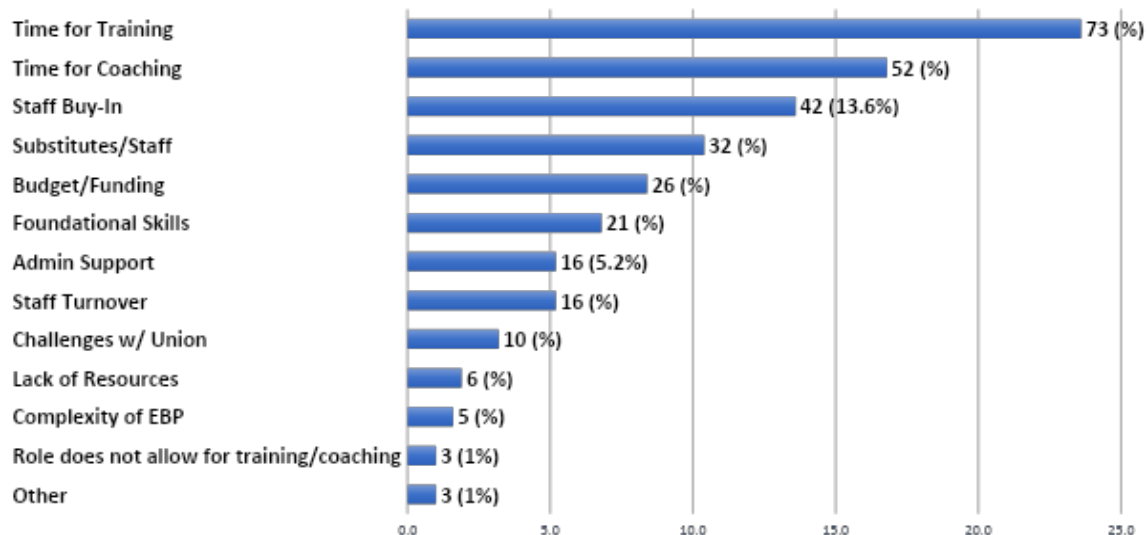
must review their selection of Cadre each year in order to determine if the identified Cadre is the best it for the role. In addition, Cadre are required to meet regularly with their local teams and direct supervisors to develop improvement plans that can shape local activities. In order to help the Cadre learn new methods to address staff buy in, workshops have been provided on motivational interviewing. The analysis of barriers and facilitators and improvement cycles to address them is ongoing and continues to be a primary part of what the CAPTAIN leadership team is working to address.

In 2017, a problem analysis process was conducted during the exploration stage of the North Carolina project that yielded a number of barriers which continue to be present. Attrition of special education teachers at the school and local district level creates a constant need for skills development in the area of services for students with ASD. Attrition also impacts progress of autism teams due to time spent onboarding new members. Although there is a great need for professional learning, educator participation in these offerings is voluntary. School systems choose whether to participate in the supports provided by DPI at the state level. Currently, 20% are not engaging. Even within school systems that are actively involved, site-based management at the school level allows for some educators to be excluded. Effective coaching requires allocation of personnel and time, both of which are in high demand in North Carolina schools. A lack of dedicated personnel at the school district level impedes fidelity of implementation in coaching. However, despite the range of barriers identified, they are counterbalanced by several facilitators. One, which is unique to the state of North Carolina, is employment of four statewide consultants under the DPI who assist

educators serving students with ASD. Additionally, the efforts made to establish teaming structures at the local system level have resulted in 70% participation by North Carolina school district. Lastly, North Carolina is home to several nationally recognized agencies that have extensive expertise in research and innovation in the field of autism with whom we partner. These collaborative partnerships have supported the implementation efforts to move forward and scale up.

Discussion

While the implementation plans, and models rolled out in California and North Carolina are different, there are many common elements. In addition, the lessons we have learned are strikingly similar. What follows is a description of the lessons learned as a result of our implementation efforts.

Go Slow to Grow

Implementation science delineates the importance of stages of implementation. Within that, it is clear that much work must be accomplished prior to attempting to implement or scale up a new initiative. In both states, we can cite several prior initiatives that were rolled out on a large scale with limited success. In examining the effectiveness of those initiatives, our teams realize that what was lacking was intentional exploration and planning and too great a rush to go full scale with implementation. When implementation is rushed, important factors can be missed. It is far more effective to spend time on the exploration and planning phases and then install in locations that exhibit proper readiness.

Leadership Is Everything

Leaders can impact the available capacity to foster change and innovation. The role of "first-level" leaders, those who supervise individuals providing direct services, is

particularly critical to organizational effectiveness and to the use of EBPs. These leaders are in a position to facilitate implementation of EBPs, including the development of organizational structures and processes for EBP sustainment and scale-up. Additionally, they are able to effectively advocate within the larger system to acquire the needed resources to implement and sustain an initiative. It is important to identify and develop leaders who understand these leadership drivers and the role they can play in effective implementation and scale up.

Coaching is Hard but Necessary

Research shows that active coaching is a necessary component for change in classroom practices to occur (Joyce & Showers, 2002). In order to create an effective coaching model, it is necessary to select the right people to serve as coaches and ensure that there is dedicated and protected time to allow for coaching. Coaching is intricate, involving both explicit coaching skills as well as an array of relationship building and communication skills. Finding great coaches requires strict selection as well as training and coaching of the coaches for them to effectively support classroom staff in a highly effective way.

Sustainment Requires Organization and Systems Change

Organizational drivers are critical to implementation. An initiative does not stand alone; it is one of many things happening within an organization or system. As such, in order for it to be sustainable, it needs to be incorporated into the organization or system. This involves effectively mapping its relationship to existing initiatives as well as leveraging and sometimes redefining roles and resources. In analyzing necessary resources, the potential contribution of

internal and external partnerships should not be overlooked.

Flexibility is Necessary (Within Reason)

Establishing a solid framework and model is important. There are changes that happen that are often beyond our control. Thus, flexibility is an integral part of implementation and of establishing sustainability. Schools are dynamic organizations and adjustments may be necessary within each school district to meet the expectations of an initiative, such as redefining roles and/or reconsidering priorities in alignment with existing initiatives. Reactions to changes on various levels should always be measured against the overall vision and goals to ensure that teams do not lose focus on the important work of improving outcomes for students with ASD.

You Are Not Alone

The work of statewide capacity building to support educators' implementation of evidence-based practices for students with ASD can be daunting. We need a community of practice to support this work. Through the relationship formed between California and North Carolina, we identified similarities related to implementation practices, barriers to effecting change, and challenges with scale-up and sustainability. This collaboration has allowed us to share successes and missteps, solutions to barriers, as well as resources and expertise. Connecting with and learning from each other has been and continues to be valuable to both states. At the time of this publication, there is no readily accessible resource that serves as a directory for individuals supporting this state level implementation work across states. The work is housed in different agencies, from institutes of higher education to state education agencies to the various other state departments such as the Department of Health and Human Services. We have learned that we are not alone, and

neither are you. In order to facilitate increased collaboration among those who engage in similar work, we are in the process of creating a national network of statewide implementers, the National Autism Network of Statewide Implementers (NANSI).

Recommendations

Purveyors of EBP implementation have an arduous task in developing models that result in effective and sustained use of EBPs within public education contexts. It is fortunate that many are documenting their implementation methods and have identified, through qualitative and quantitative methods, the facilitators and barriers to their success and the lessons learned in order to suggest potential improvements. This paper summarizes the experiences of two state implementation models from opposite sides of the country who have undertaken this challenge. Although the models are different

based on state and local needs and contexts, many of the key findings and lessons learned from each respective state are the same. These examples can be used by others to help shape similar large-scale implementation projects. Reviewing the lessons learned, there is a strong connection to critical components of implementation science; therefore, both teams emphasize the need for this work to be approached systematically from that framework.

Finally, the projects outlined in this study are not research studies. Rather, they are case examples of efforts to take EBPs and models of implementation and deploy them at a statewide level. Ideally, information from our case examples could help to inform future research studies that will provide a more definitive path for how to bridge this research to practice gap.

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An Investigation of Computer Assisted Reading Instruction to Teach Phonics Skills to Young Students with Developmental Disabilities

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Abstract: Research has established that students with developmental disabilities, including intellectual disability (I/DD) can learn to read connected text using a teacher-led, phonics-based approach. However, there is less research investigating how computer assisted instruction (CAI) can be used to teach phonics to students with I/DD. Research has also demonstrated that students with I/DD may make slow, incremental progress when acquiring basic reading skills. Curriculum-based measures in reading (CBM-R), which are widely used with other student populations, may be sensitive to incremental growth in reading skills. In this study, three elementary aged students with I/DD completed phonics lessons using a computer assisted reading instruction program. CBM-R was used weekly to assess students' progress in response to reading instruction. This study utilized a multiple baseline design with regulated randomization. After 13 weeks of instruction, students' responses on CBM-R was highly variable with minimal changes in level. The author discusses study limitations, areas for further research, and recommendations for practitioners who wish to utilize CAI and CBM-R with their students with I/DD.

Students with developmental disabilities (I/DD; including intellectual disability) need to read text in order to learn academic content and make progress in the general education curriculum. Recent research has focused on demonstrating that students with I/DD can be taught to read connected text using intensive phonics-based reading instruction (e.g., Allor et al., 2010; Lemons et al., 2012). This type of instruction focuses on teaching students the connection between printed letters and the corresponding spoken sounds (International Literacy Association, 2018). Many published research studies examined the effects of teacher-led reading instruction using a phonics-based approach with students with I/DD and found this type of instruction to be promising (e.g., Allor et al., 2014; Browder et al., 2012; Lemons et al., 2012).

Computer assisted reading instruction using a phonics-based approach has received less research attention. Computer assisted instruction (CAI) is defined as "the use of a computer technology to present learning materials and/or check student knowledge" (Pennington, 2010, p. 240). CAI is an increasingly popular instructional tool in special education classrooms (Root et al., 2017) and is likely already being used with students with I/DD.

Review of CAI to Teach Basic Reading to Students with I/DD
Although there are no literature reviews specifically investigating using CAI to teach basic reading skills such as phonics and decoding, several recent literature reviews have investigated using CAI to teach academic content to students with developmental disabilities. A recent review conducted by Root et al. (2017) concluded that CAI was an evidence-based practice for teaching academic content to students with autism spectrum disorders (ASD). Although the majority of the included studies addressed

literacy instruction (e.g., sight words reading, comprehension) to students with ASD, only a few specifically assessed using CAI to teach phonics and decoding (e.g., Travers et al., 2011; Whalen et al., 2010). Travers et al. (2011) compared teacher-led instruction on alphabet skills to an author-developed CAI program. The CAI program utilized discrete trial teaching and errorless learning in 10 minute lessons. Both interventions were effective in improving preschoolers' alphabet skills. Whalen et al. (2010) used *TeachTown: Basics* (TeachTown Inc., 2016) with PreK-1st grade students with ASD for three months. *TeachTown: Basics* utilizes Applied Behavior Analysis principles to teach a wide range of early learning skills. Students in the intervention group showed improved skills in language and basic academic skills (including reading) compared to the control group, who received business-as-usual instruction.

Another review focused on using CAI to teach academic skills to students with intellectual disability (ID; Snyder & Huber, 2019). Again, while the majority of the included studies focused on literacy skills, only one examined using CAI to teach phonics and decoding (Everhart et al., 2011). Everhart et al. (2011) used an author-developed reading CAI program using Microsoft PowerPoint and discrete trial teaching. The authors utilized a multiple baseline across participants design. Both elementary student participants showed improvements in basic reading skills in response to CAI. In both the Root et al. (2017) and Snyder and Huber (2019) reviews, the handful of studies focusing on phonics and decoding instruction used different CAI programs, leaving teachers with no clear conclusions regarding which CAI reading programs work and why.

Assessing Reading Skills

A related issue concerns how teachers should assess students' progress in response to CAI. There are limited reading measures that are well-suited for the unique needs of students with developmental disabilities (Baker et al., 2010). Curriculum based measurement of reading skills (CBM-R) is a progress monitoring tool commonly used to assess reading skill growth in other student populations (Stecker et al., 2005) that may be a viable solution for assessing the reading skills of students with I/DD. CBM-R consists of short-duration measures, typically less than three minutes long. Alternate forms of the same CBM-R are administered repeatedly with a focus on analyzing results for growth over time (Hosp et al., 2007; Stecker et al., 2005). Initial developers of CBM intended for teachers to create their own CBM-R that align directly to the skills being taught (Hosp et al., 2007). In other words, if a child with I/DD was receiving instruction on a set of ten letter sounds, the teacher would design a CBM-R that would assess only those ten targets. However, many commercial CBM-R products are available that assess all the targets possible within a skill (i.e., all the possible letter sounds). CBM-R procedures are standardized (i.e., administered the same way every time). CBM-R may be more amenable to accommodations in format, administration procedures, and responding that may be required by students with I/DD than traditional reading assessments (Jones et al., 2019).

Researchers already demonstrated CBM-R may be an effective to way to measure response to teacher-led phonics instruction for students with I/DD (e.g., Allor et al. 2014, Lemons et al., 2012). Results from these studies indicate CBM-R can be sensitive to gradual changes in reading performance for students with I/DD. Students with I/DD may demonstrate variability in scores across

administrations, so more data points may be required to show changes in trend (Jones et al., 2019).

Purpose of the study

The purpose of this study was to evaluate the effects of computer assisted reading instruction on the basic reading skills of three primary school students with I/DD. Effects were measured using CBM-R. Specifically, the research sought to answer the following questions.

1. Is CAI instruction effective for teaching basic reading skills (e.g., letter sound correspondence and sounds blending) to students with I/DD?
2. Can CBM-R be used to measure changes in student progress in response to CAI instruction in reading?

Method

This study was conducted by a doctoral candidate studying special education. The primary researcher conducted and scored the weekly CBM-R. She also created a profile for each student in the computer program. The primary researcher trained the classroom staff to operate and navigate through the CAI reading program. The primary researcher and lead classroom teacher worked together to create a schedule for when students would complete instruction in the computer program. A second person conducted IOA on the CBM-R administrations.

The study was conducted in a self-contained special education classroom intended for learners with low-incidence disabilities in grades kindergarten through second. This classroom was housed within a public elementary school in a small city in the southeastern US. The classroom was considered a demonstration classroom, staffed by graduate students studying special education and applied behavior analysis at a nearby university. Other classrooms in the school were staffed by teachers employed by the school district.

Participants

Three students participated in this study. Andy was seven years old, enrolled in kindergarten, and eligible for special education under IDEA in the categories of intellectual disability and speech language impairment (SLI). His IEP further specified his cognitive functioning as within the mild range (i.e., IQ and adaptive behavior standard scores between 55-70). In addition to language deficits, Andy also had a severe articulation disorder that impacted his speech intelligibility. Kevin was six years old, enrolled in kindergarten, and eligible for special education in the IDEA categories Significant Developmental Delay and SLI. Michael was six years old, enrolled in kindergarten, and eligible for special education in the IDEA categories ASD and SLI. All three students demonstrated adequate hearing and vision and were observed to effectively use a mouse to navigate a computer program prior to the onset of the study.

Materials and Setting

In the intervention phase, each student completed daily reading instruction using Accessible Literacy Learning (ALL; Tobii-Dynavox, 2017), a computer assisted instructional program designed to teach basic reading skills to students with complex communication needs. Students accessed ALL using a desktop computer with a monitor and mouse that were stationed in the back of the classroom. The computer desk was located away from main instructional areas and faced the back wall of the classroom.

Experimental Design

A multiple baseline design (Gast & Ledford, 2014) was used to evaluate the effects of

basic reading skills instruction presented via ALL on student's performance on two commercially available reading curriculum-based measurement (CBM-R) tests. Regulated randomization (RR) procedures were used to determine participant order (i.e., which participant would begin intervention first) and staggered entry to the intervention condition (Koehler & Levin, 1998). RR includes non-parametric statistical analysis, which was used to evaluate treatment effects. A benefit of using RR is that it allows each student to enter the intervention condition faster, which may be warranted given that research has demonstrated that children with developmental disabilities may require a significant period of time to show small improvements in reading skill (e.g., Hill & Lemons, 2015, Allor et al., 2010). RR helps guard against threats to internal validity that plague multiple baseline designs, such as maturation and history (Ainsworth et al., 2016). In addition to the non-parametric statistical analysis, all data were graphed and analyzed for level, variability, and trend.

Dependent Measures
Primary dependent measures included two commercially available CBM-R, administered to each student individually once per week. The easyCBM Kindergarten Letter Sound Fluency test (K-LSF, University of Oregon, 2009) was used to assess how many letter sounds a student could vocalize when visually presented with a grid of individual letters/letter combinations (e.g., wh, qu, th) printed on an 8.5 x 11 inch paper. Each grid contains 110 letters or letter combinations. The score represents total correct sounds "read" in one minute. EasyCBM offers nine alternate forms of K-LSF on their website. A different alternate form was presented each week, and the order of the alternate forms was randomized for each participant. Each alternate form contained typed

administration procedures as well as scripted teacher directions, which were identical across alternate forms.

The DIBELS Next First Sound Fluency CBM-R (progress monitoring version; Good & Kaminski, 2011) was used to assess each participant's ability to vocalize the first sound heard in a spoken word. For example, if the teacher said the word "moon," a correct student response would be to vocalize /m/. The score on this subtest represents how many correct first sounds were vocalized within one minute. DIBELS Next offers 20 alternate forms of First Sound Fluency (FSF). A different alternate form was used each week, and the order of the alternate forms was randomized for each participant. Each alternate form contained typed administration procedures as well as scripted teacher directions, which were identical across alternate forms. For this CBM-R, the student was not shown a piece of paper. Rather, the researcher used the alternate form as a guide for presenting and scoring test items.

Procedure
Baseline. In baseline, each student received reading instruction consistent with their peers. Reading instruction in baseline consisted of basic skills instruction using daily discrete trial teaching (DTT) sessions. DTT instruction focused on letter identification/naming and letter sounds. Teachers provided instruction on reading comprehension less formally during small and whole group class activities several times per week. During baseline, the primary researcher assured that participants could use a computer mouse to operate a computer program.

Intervention. In the intervention condition, each student individually completed instruction using ALL. Classroom teachers

arranged an instructional schedule so that each participant would receive 30 minutes of instruction using ALL per day, sometimes broken into smaller chunks spread throughout the school day. During ALL instruction, each student worked at the classroom computer station. A member of the classroom staff started ALL on the computer, then prompted each student to begin working. Although a classroom staff member was assigned to supervise the student, usually the staff member was simultaneously providing instruction to 1-2 other students at a table several feet away from the computer. Therefore, the participant was primarily working on ALL independently with only periodic check-ins (once per 5-10 min) from the supervising classroom staff member.

Prior to beginning instruction in ALL, each student completed the ALL pre-assessment. ALL uses the results of the pre-assessment to place students within the program's sequence. After the pre-assessment, each participant began instruction on Level 1, which included two different activities: sound blending and letter sound correspondence. In sound blending, four pictures were displayed on the screen. First, each picture was highlighted while the program named the picture. Second, the program said each individual sound in the word slowly (e.g., bug was stated as /b/ /u/ /g/). Then the student was directed to select the picture that matched with the spoken sounds. Letter sound correspondence activities in Level 1 focused on the letters a, m, p, t, o, and n. In this activity, the student was shown an array of four letters. The program voiced a letter sound (e.g., /m/), then the student was directed to choose the letter that matched the sound. A student received instruction on one letter at a time until the student met the program's mastery criteria (80% correct in two consecutive sessions) to move on to the next letter. When all six letters

were mastered the student advanced to Level 2, which included a new set of letters and sound-blending lessons. Two participants were able to access Level 2 instruction in the final weeks of the study. Level 2 letter sound correspondence instruction began with letter C. Due to the end of the school year, no students received any additional instruction on any other sounds in Level 2.

Interobserver Agreement
Two researchers collected data simultaneously for at least 35% of sessions across all phases for all participants and the primary researcher calculated interobserver agreement (IOA). Before the start of the study, the primary researcher trained a second observer to score both CBM-R measures. The second observer was also a doctoral candidate and experienced special education teacher. During IOA sessions, the primary researcher administered and scored each CBM-R with the participant while the second observer independently scored the participant's responses. The primary researcher calculated IOA for each CBM-R by dividing the number of agreements (i.e., when both observers agreed on the participant's correct/incorrect response to the test item) by the number of agreements plus disagreements. This number was multiplied by 100% to obtain a percentage of agreement.

IOA data on Michael's performance were collected for 6/14 sessions (42.9%). IOA on LSF ranged from 90-97.8% (M = 93.9%). IOA on FSF ranged from 91-100% (M = 93.2%). IOA data on Kevin's performance were collected on 5/14 sessions (35.7%). Kevin's LSF IOA ranged from 85.7-96.2% (M = 91.9%) and his FSF IOA ranged from 92.6-100% (M = 94.9). IOA data were collected for Andy on five out of 12 sessions (41.6%). Andy's IOA on LSF ranged between 70-90% correct (M = 85.76%) and 57-100% (M = 80.22%) on the FSF test.

Andy's lowest IOA for both LSF and FSF occurred on the same day. Variability in Andy's IOA was likely due to Andy's severe articulation disorder. After the lowest IOA session, the two observers discussed the disagreements and consulted with the lead teacher about the nature of Andy's articulation errors. Andy consistently made the articulation errors on certain sounds (e.g., /z/) so the team expanded the range of correct responses to included Andy's consistently made articulation errors. IOA improved in future sessions.

Procedural Fidelity
Procedural fidelity data consisted of collecting data on student on-task behavior while using ALL. On-task behavior was scored when the student's head was oriented towards the computer screen. Off-task behavior was scored when the student was looking away from the computer or talking to another student. The primary researcher trained the data collector until both had reached acceptable interobserver agreement on the occurrence or non-occurrence of students' on-task behavior while using ALL. The presence or absence of on-task behavior was recorded using momentary time sampling with 15 s intervals. If two students were working in ALL on different computers at the same time, the data collector rotated between students working in ALL to record on-task data. For example, the data collector would record on-task behavior for Student A at the end of 15 s, then Student B at the end of the second 15 s interval, then Student A again at the end of the third 15 s interval, etc. If only one student was working in ALL, the data collector recorded on-task behavior at the end of the first 15 s interval, then again at the end of third 15 s interval, etc. Data was collected for up to 20 min per session. On-task data were collected for Andy for eight sessions for a total of 148 min. Andy's average time on task 81.1% (range 61-96%).

On-task data for Michael were collected for nine sessions for 182 min. Michael's average time on task was 74.8% (range 62-84%). Finally, on-task data for Kevin were collected five times for a total of 102.5 min. Kevin's average time on task was 85.6% (range 81-92%).

Results
Andy completed 20 sound blending lessons. He completed 64 letter sound correspondence lessons in Level 1, and nine letter sound correspondence lessons in Level 2. Michael completed 28 sound blending lessons. He completed 82 letter sound correspondence letters in Level 1. He did not advance to Level 2 in letter sound correspondence. Kevin completed 18 sound blending lessons. Kevin completed 42 letter sound correspondence lessons in Level 1, and four letter sound correspondence lessons in Level 2.

CBM data for Andy, Michael, and Kevin are shown in Figures 1 and 2. Figure 1 depicts the participants' scores (i.e., total correct letter sounds read) on the EasyCBM Letter Sound Fluency task. Figure 2 depicts the participants' scores (i.e., total correct first sounds vocalized) on the DIBELSNext First Sound Fluency task.

For the Letter Sound Fluency task, Andy demonstrated an accelerating trend in the baseline condition. His data intervention indicates a slightly increased level, slightly accelerating trend but both moderated by increased variability. Michael also demonstrated an increasing trend in baseline. Intervention data was highly variable with no clear change in level or trend. Kevin had mostly stable data with no trend in baseline. His intervention data shows an increasing trend for the first five data points, however there is no significant change in level compared to baseline. The results of the regulated randomization non-parametric tests

Figure 1

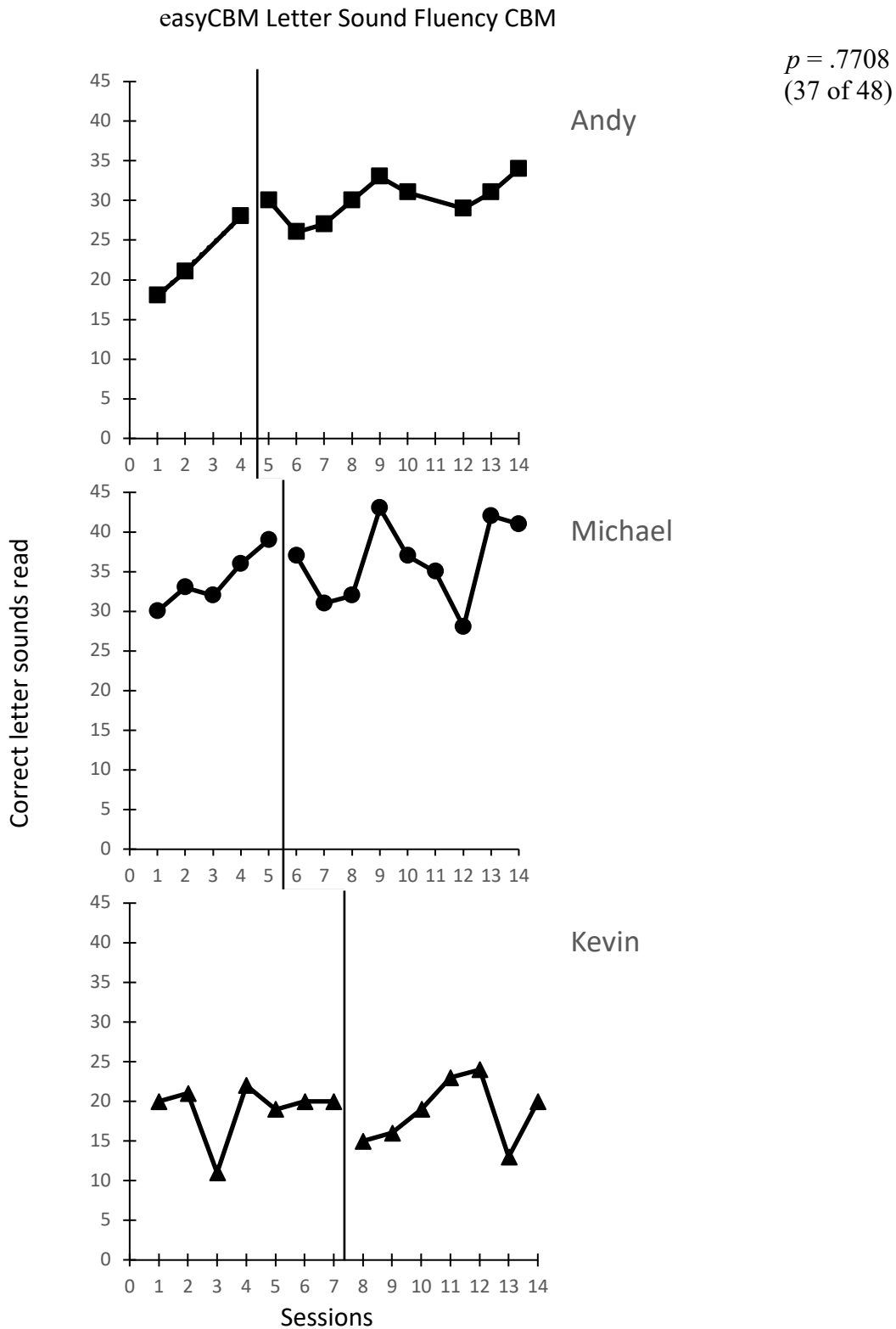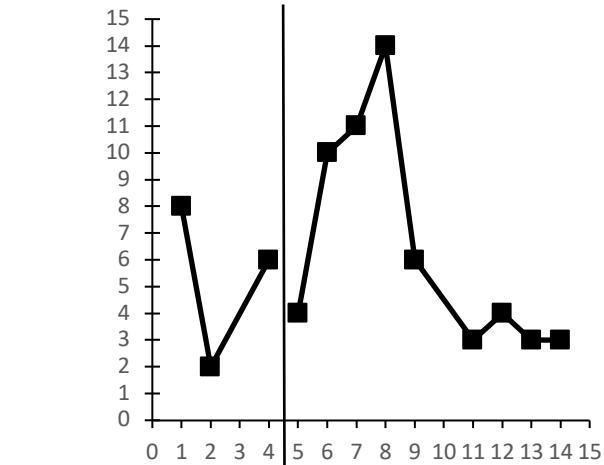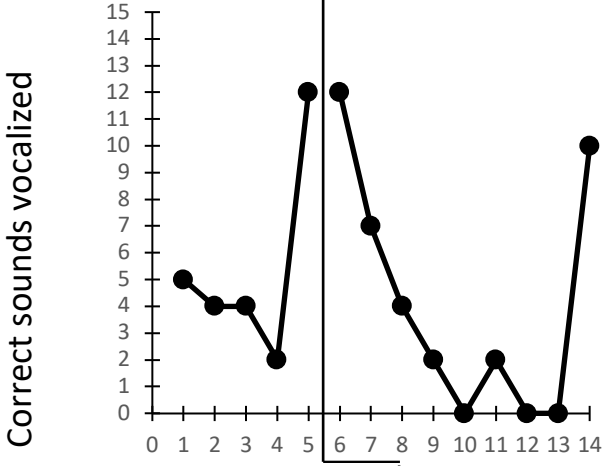*Number of Letter Sounds Correctly Read on the easyCBM Letter Sound Fluency CBM.*

Figure 2

DIBELSNext First Sound Fluency CBM

indicate $p = .7708$, (37th of 48 permutations), which is non-significant.

First Sound Fluency CBM

For the First Sound Fluency task, Andy's baseline data was highly variable with no clear level or trend. Intervention data indicated an accelerating trend for the first four data points with a sharp drop at the fifth data point. Data points 6-10 indicate a more stable pattern of responding with no clear difference in level from the baseline condition. Michael's baseline data initially indicated a decelerating trend with a sharp increase in the fifth data point. His intervention data indicated a decelerating trend with a sharp increase for the final data point. There is significant variability in the intervention data. Kevin's baseline data indicates an accelerating trend between data points 3-7. Intervention data is highly variable with no clear change in level or trend. The results of the regulated randomization non-parametric tests indicate $p = .2917$, (14th of 48 permutations), which is non-significant.

Discussion

In this study, primary school students with developmental disabilities were exposed to computer assisted reading instruction lessons focused on letter sound correspondence and sound blending. Student performance was measured using weekly curriculum-based measures of reading, specifically, letter sound fluency and first sound fluency. Although much of the data were highly variable, generally students made little or no progress as measured through progress data collected by ALL and weekly CBM-R.

Several factors may have contributed to these outcomes. First, prior researchers have noted that students with developmental disabilities may require intensive reading instruction for months or years in order to make small gains

(e.g., Allor et al., 2010; Hill & Lemons, 2015). This study was far shorter. There may not have been enough instruction for students to show gains. Second, research using CBM-R with students with I/DD has repeatedly demonstrated significant within-student variability on repeated CBM-R administrations. In other words, variability on reading CBM-R may be typical with this population. Therefore, more data points are needed to show trend when CBM-R data is highly variable (Jones et al., 2019).

Second, both CBM-Rs assessed all letters and letter sounds. However, progress monitoring in ALL indicated that students received intensive instruction on only a few letters and letter sounds. A CBM-R that is better aligned to the students' instructional program (i.e., assesses only mastered skills and skills targeted for instruction) may be more sensitive to incremental changes in student performance (Snyder & Ayres, 2020).

A third issue is that students' on-task behavior was not closely monitored by the classroom staff. Data collection for on-task behavior consisted of observations from across the classroom. From that distance, a student might appear to be working in ALL, but without closer supervision, it is difficult to ascertain if the student was meaningfully participating in ALL instruction. The ALL activity data reported occasions where the student accessed other ALL activities outside the lessons assigned in Level 1, such as supplemental read aloud story lessons. This off-task behavior went undetected by the classroom teachers and data collector collecting on-task data and was only noticed when the ALL activity report was reviewed later by the researcher. Closer supervision (perhaps 1:1 or small group from an adult) along with intermittent reinforcement for on-task behavior delivered by a classroom staff member would be preferred in order to ensure

students are engaging in the behaviors needed to be independent and successful with the program (Plavnick et al., 2016). However, the supervision conditions during this research study likely approximate the conditions in most special education classrooms, where students are expected to work independently on a computer or tablet while the teacher works with other students in another part of the room.

Despite no clear demonstration of reading skill improvement, this study contributes to the extant literature in several ways. First, this study adds to the literature as another demonstration of the use of regulated randomization in reading research for students with I/DD (see Ainsworth et al., 2016). Due to the predetermined sequence for participants entering intervention, using regulated randomization may allow students to proceed to intervention more quickly then they typically would in a single case design reading study. This is especially prudent considering that for some students, baseline conditions may represent less-than-optimal reading instruction.

Unlike typical single case design studies, this study relied on regulated randomization rather than visual analysis to determine when a student moved from baseline to intervention. Subsequently, two students' data indicate increasing trends in baseline. Although normally this would be a troublesome event in a research study, increasing trends in baseline data suggests that the students became better respondents on CBM-R measures with repeated exposure in the early stage of the study. This finding bodes well for teachers who wish to use CBM-R with their students with developmental disabilities. Students with I/DD often do not have experience completing standardized reading assessments like CBM-R (Jones et al., 2019), but the

results of this study suggest that students may learn to successfully complete CBM-R tasks after repeated exposure to the process. Future research should consider implementing a training phase so that students can acclimate to CBM-R administration procedures as well as help researchers determine what accommodations or modifications may be necessary to ensure student success (Jones et al., 2019). This training phase should use CBM-R that assess known targets before implementing baseline conditions where students are assessed on CBM-R that assess unknown targets.

Finally, this study extends the research on computer-assisted reading instruction on students with I/DD (e.g., Ainsworth et al., 2016, Grindle et al., 2013; Plavnick et al., 2014). Teachers of students with I/DD are likely already using CAI to teach reading, so more research is needed to explore the effects of CAI on student reading skill acquisition, what instructional components of reading CAI work well for this population, and how much/how often to incorporate CAI instruction into the classroom schedule to maximize learning.

Implications for Practice
Computer-assisted instruction may be a beneficial supplement to teacher-led instruction and reduce the need for 1:1 instruction (Root et al., 2017). Researchers have several recommendations regarding effective use of CAI for students with I/DD. First, students with I/DD may have limited experience with CAI. Therefore, the teacher should thoroughly train students to navigate and respond within CAI programs before allowing students to work independently (Snyder & Huber, 2019). While many CAI programs can assess a student's instructional level, teacher assistance may be required for CAI programs that do not place a student on

the appropriate instructional level (Whitcomb et al., 2011).

Once the student is ready to complete CAI independently, the teacher should collect on-task behavior data to determine the student's tolerance for CAI before the student reaches satiation, which may result in interfering behaviors (Whitcomb et al., 2011). This may be shorter or longer than the length of time the student can stay on task during teacher-led reading instruction. Knowing this, the teacher should set CAI sessions to end before the student reaches this limit. The teacher can incrementally increase the length of the CAI session through the use of shaping and reinforcement.

Second, teachers should closely monitor or assign instructional staff to closely monitor students using CAI. Ideally, one staff member should be assigned to supervise a small group of students using CAI. This staff member should monitor the students to ensure they are meaningfully participating in the CAI program, prompt the students to remain on task as needed, and deliver intermittent reinforcement for on-task behavior (Snyder & Huber, 2019).

Since many CAI programs have pre-determined mastery criteria to move onto the next lesson, the teacher will need to monitor student performance within the CAI program to ensure that students do not get "stuck" on a lesson. If so, the teacher will need a plan to move the student forward to the next CAI lesson by providing additional teacher-led instruction on the content. Other studies have implemented teacher-led match to sample training (Plavnick et al., 2014) or discrete-trial teaching (Grindle et al., 2013) to help students meet the mastery criteria to move on to the next lesson. Finally, teachers should consider that CAI alone may not be sufficient for student learning. Teachers should

continue to use other research-based practices for teaching reading to students with DD alongside CAI (Plavnick et al., 2016).

Teachers who desire to use CBM-R to assess students' reading skills should plan to teach students how to respond to those measures prior to using them for assessment. Students may not have experience with CBM-R and will need repeated exposure to learn how to respond appropriately. To reduce student frustration, teachers should consider using known targets during the training sessions to increase opportunities for student success in this training phase.

Teachers may need to create their own CBM-R that assesses only the stimuli targeted for instruction. For example, if the student has only mastered eight letters sounds, then the teacher should create a CBM assessing only those letter sounds rather than all the letters sounds. Although teachers may have easy access to commercially produced CBM (e.g., easyCBM, DIBELS Next), using those types of global outcome measures may obscure a student's progress. Additionally, using these measures may lead to student frustration when the student is continually assessed on targets they have not been taught. Teachers creating their own CBM-R aligned to instruction is consistent with the original intent of CBM (Hosp et al., 2007).

Conclusion

Researchers continue to explore how best to teach reading to students with I/DD and how to assess incremental progress. This study bolsters the extant research demonstrating that students with I/DD may require months or years of intensive instruction to show gains. More research is needed to investigate using CAI to supplement teacher-led reading instruction. Finally, researchers need to continue to investigate if CBM-R is a valid

means to assess reading skill acquisition for students with I/DD, as well as investigate any accommodations or modifications that are required to assure that student performance on those measures are true representations of reading ability.

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Parents Coaching in Naturalistic Interventions to Improve Communication Skills for Adolescents and Adults with Autism via Telepractice

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Abstract: The primary purpose of the study was to determine if educators could use telepractice service delivery modes as a tool to implement a naturalistic intervention for parents with adolescents and adults with Autism Spectrum Disorder (ASD) at their homes. A multiple probe design across participants was used in the study to examine the effects of the intervention among three parents of adolescents and adults with ASD. The results indicated a functional relation between the intervention and parent strategy implementation and improvement of children's targeted communication skills. Effect size results for the parents and participants indicated strong effects consistent with visually inspected data. A discussion of future research is provided.

The reported autism spectrum disorder (ASD) prevalence shows the number has increased rapidly during the past decade across countries worldwide (Baio et al., 2018; Hansen et al., 2015; Neik et al., 2014). The prevalence of adolescents and adults with ASD has also markedly increasing, and, as a result, the demand for services for this population are increasing, including social-communication skills instruction (Gerhardt & Lainer, 2011; Hong et al., 2016).

Adolescents and adults have many opportunities to rapidly improve their knowledge and skills to understand people and develop independence. However, there are some challenges such as the complexity of social-communication and more expectations for many adolescents especially individuals with ASD (Gates et al., 2017). All ages of individuals with ASD, especially adolescents and adults, have social-communication difficulties and barriers interacting with others across a range of places and activities such as school, home, and community (American Psychiatric Association [APA], 2013; Ganz, 2015; Holyfield et al., 2017). These barriers can cause a lack of social skills and an increase in challenging behaviors. Adolescents and adults with ASD need more practice and expansion in complicated and involved language beyond typical communication for things that they need (Holyfield et al., 2017). There is a major dearth in the provision of and research on communication interventions, such as AAC, for individuals with ASD who are older than school-aged children (Cannella-Malone, 2018; Ganz et al., 2017).

Providing parents with evidence-based strategies, such as naturalistic interventions for increasing communication skills, are extremely important to the field. Many studies have shown that communication

partners, including parents, can learn to implement naturalistic interventions effectively with their children with ASD across age ranges from preschool to high school (Franzone, 2009; Roberts & Kaiser, 2011). Parents have a crucial role in teaching communication with their children because they are more knowledgeable about their child and are present across communication contexts. However, there are few studies of parent coaching in any intervention for communication skills for individuals with ASD that include adolescents and adults age (Dogan et al., 2017; Hong et al., 2014; Levinger, 2012).

Adolescents and adults with ASD require support in learning communication skills in their natural community setting (Palmen et al., 2012). Naturalistic interventions are evidence-based strategies that uses principles in applied behavior analysis which parents could use to promote their child's communication skills in both verbal and non-verbal communication (Franzone, 2009; Hong et al., 2016; Wong et al., 2014). These strategies are designed to increase appropriate communication skills based on the children's interests by expanding their skills in their natural contexts throughout the day within their occurring routines (Akamoglu & Dinnebeil, 2017; Wong et al., 2014). There remains a need for research on adolescents and adults with ASD that is implemented using natural contexts.

Natural communication partners need to be involved as implementers in naturalistic interventions, to promote generalization and maintenance of skills (Hong et al., 2019). Generalization refers to how natural communication partners will provide strategies across different people, settings, and activities. Maintenance refers to the learners' continued target behaviors and the strategies after the intervention is terminated and encourages the use of these strategies consistently over time (Cooper et al., 2007, Hong et al., 2019). Parents of adolescents with ASD can learn and successfully teach naturalistic interventions in their home with the improvement of their children's communication and social skills (Kaiser & Roberts, 2013; Symon, 2005). Parents could use strategy implementation in naturalistic environments to create opportunities for their child to practice skills (Brown, 2016); modeling communication skills for their child to imitate; prompting new words by using verbal, visual, or physical guidance; prompt fading with time delay; and expanding language by adding new words to communicate (Schreibman et al., 2016). Each of these strategies might be useful for parents to enhance and increase opportunities for individuals with autism to communicate.

The American Speech-Language-Hearing Association (ASHA) defines telepractice as "the application of telecommunications technology to the delivery of speech language pathology and audiology professional services at a distance by linking clinician to client or clinician to clinician for assessment, intervention, and/or consultation" (ASHA, 2020). Telepractice technology is used to exchange information (i.e., intervention and/or assessments) between therapists and families through electronic communications devices from distance areas. Telepractice also helps to improve services to meet individuals' unique needs during the COVID-19 pandemic that requires social distancing services. Telepractice coaching is a tool used to increase parents' procedural fidelity for working with their children and decrease the gap between the available services and intervention requirements. Families of individuals with ASD often experience a discrepancy between the availability of services in their communities and their need

for services (Kogan et al. 2008; Wainer & Ingersoll, 2015). The lack of services is often due to a lack of access in rural areas, or length of waitlists for services (Machalicek et al., 2016). In recent decades, the technology to support online meetings and the specialized services has developed rapidly (Ingersoll et al., 2016). Promotion of parent coaching via telepractice may decrease the inequitable discrepancy in delivery of services across families of individuals with ASD. There are many studies that discussed effective coaching procedures for parents by using telepractice and reporting on children's behaviors (Bearss et al., 2018; Ingersoll & Wainer, 2013; Ingersoll et al., 2016; Vismara et al., 2018; Wainer & Ingersoll, 2015), but few reported how well parents implemented intervention components (Wainer & Ingersoll, 2015). Although the strategies that we will use in this study have reported on effective ways of teaching individuals with ASD and their parents (Ingersoll et al., 2016; Ingersoll & Berger, 2015), there is a need for evaluating telepractice coaching with different ages, such as adolescents and adults, rather than focusing only on younger ages which are presented in most of the telepractice studies of coaching with caregivers (Wetterborg et al., 2019).

This study identified how educators could implement naturalistic intervention for parents with adolescents with ASD at their homes by using telepractice service delivery. The conceptual orientation of this study is based on naturalistic interventions in applied behavior analysis and the principles of using telepractice tools. By individually coaching parents and giving them feedback via telepractice intervention, parents can increase the parents' behavioral skills and increase their children's communication skills.

The purpose of this study is to evaluate the effects of a telepractice parent-coaching on naturalistic interventions used by parents of adolescents and adults with ASD. The research questions are: (a) Is there a functional relation between the telepractice parent-coaching intervention and parent strategy implementation to teach adolescents and adults with ASD to communicate?, and (b) Is there a correlation between the parent strategy implementation and the use of children's targeted communication skills?, and (c) What is the social validity for the parents with adolescents and adults with ASD?

Method
Experimental Design
A single case experiment multiple probe design (Ledford & Gast, 2018) was conducted across five parent-child dyads. This design was used for the purpose of avoiding parent fatigue to record the videos during extended baseline phases. The three phases consist of baseline, intervention, and maintenance. The coach collected generalization at least 1 data point per phase across all dyads. Each dyad began the intervention session after a stable baseline and the increase of a child's behavior in intervention of the previous level. The coach used quality standards for single-case experimental design (e.g., What Works Clearinghouse [WWC], Council for Exceptional Children[CEC]) to develop the study (Council for Exceptional Children, 2014; Ganz & Ayres, 2018; Horner et al., 2005; Kratochwill et al., 2013; Reichow et al., 2008; USDE, 2019).

Participants
The study participants were recruited with a flyer through Facebook, an American social-media company, and the researcher's University's newsletter for possible participants who live in the U.S. Participants contacted the coach via email stating their interest in participating, with the coach

contacting them back if they meet eligibility criteria. Inclusion criteria for parents included: (a) parent who is the main caregiver of children who were adolescent-aged or adults (12 years old and up) with a diagnosis of ASD; (b) parent with a high-speed internet and agreed to participate by using videoconference tool; (c) live in the United States (based on IRB requirement). Inclusion criteria for child participants included: (a) age 12 years and older; (b) have ASD screening tools that confirm the presence of their characteristic; (c) no physical impairments that could prevent the individual who needs AAC. Five parents who had adolescents or adults with ASD applied to the study and met the inclusion criteria. However, after the second baseline sessions, two parent participants with their children withdrew from the study. One parent participant did not think these strategies were helpful to her child, and the second parent participant and her child did not give a reason for withdrawing. See Table 1 for parents and child demographics who continued and completed the study. Due to space restraints, the two dyads who dropped out are excluded from this report; however, one may contact the first author for this information.

Parents completed the assessments including: Autism Spectrum Rating Scale (ASRS) (Goldstein & Naglieri, 2009), assess in total symptoms, social communication, and peer and adult socialization domains; Social Communication Questionnaire (SCQ) (Rutter et al., 2003), a screener for children exhibiting symptoms of ASD; and the Vineland Adaptive Behavior Scales, Second Edition, Interview Form (Vineland-III) (Sparrow et al., 2016), results are standardized into a V-scale score with percentiles and age equivalents and measures in communication, social interaction, and daily living skills. Dyad C was not required to complete this ASRS because he did not

meet the age criteria for the assessment (more than 18 years old). See Table 1 for participant assessment scores.

Dyad A: Adora and Adrian
Adora, the mother of Adrian, received some parent-training sessions from the therapists several years ago when Adrian was in kindergarten. Adrian was a teenage girl who was diagnosed with ASD, ADHD, and specific learning disabilities. Adrian was able to communicate by answering questions but lacked two-way communication skills with another communicative partner. For generalization sessions, Adrian's younger sister participated in the conversation with Adora and Adrian. This family lived in Missouri.

Dyad B: Banita and Bane
Banita, the mother of Bane, never received any parent-training, behavioral instruction, or worked with other individuals with disabilities, prior to intervention. Bane was a teenage boy who was diagnosed with ASD and intellectual disability. Bane had speech sounds that are difficult to understand by those not familiar with the child. He could have said only one word "ha" for "hug". He was unable to independently communicate for needs and wants. This family lived in Texas.

Dyad C: Carly and Camilo
Carly, the mother of Camilo, had received in-home parent-training from speech-therapist with picture-exchange when Camilo was in kindergarten school, but never received telepractice training before. They had an adult son, Camilo, who was diagnosed with ASD. Camilo was able to communicate by requesting and answering questions but delayed and lacked two-way communication skills. For generalization sessions, Camilo's younger brother participated in the

Table 1

Summary of Parents and Children Demographics and Formal Assessment Results

Parent Participants	Adora (age 44)			Banita (age 45)			Carly (age 60)		
Gender	Female			Female			Female		
Race	Caucasian			Asian			Asian		
Education Background	High school			Master's			Doctorate		

Child Participants	Adrian (age 13)			Bane (age 15)			Camilo (age 25)		
Gender	Female			Male			Male		
Race	Caucasian			Asian			Asian		
Education Background	Middle school			High school			High school		

Test & Domain	Standard Scores[a]	%tile	Descriptor	Standard Scores[a]	%tile	Descriptor	Standard Scores[a]	%tile	Descriptor
ASRS[b] Total	74	99	very elevated	73	99	very elevated	n/a	n/a	n/a
ASRS Social Communication	61	86	Slightly elevated	82	99	very elevated	n/a	n/a	n/a
Vineland-3[c] Communication	76	5	Moderately Low	28	<1	Low	57	<1	Low
Vineland-3 Socialization	77	6	Moderately Low	34	<1	Low	38	<1	Low
SCQ[d] Total	15	-	ASD cut-off	21	-	> ASD cut-off	17	-	> ASD cut-off

[a]Scores on the ASRS are T-scores; [b]ASRS- Autism Spectrum Rating Scale (Goldstein & Naglieri, 2009); [c]Vineland Adaptive Behavior Scales-3 (Sparrow et al., 2016), [d]SCQ- Social Communication Questionnaire (Rutter et al., 2003)

conversation with Carly and Camilo. This family lived in Michigan.

Settings, Materials, and Session Contexts
Parents participated in individual coaching sessions in their homes via their computers or tablets. These sessions occurred once per week for 45 - 60 minutes each. The coach provided treatment plans and individual feedback to parents via videoconference telepractice program. The coach encouraged parents to practice the skills during any activities as much as they could in their natural routines. The coach provided weekly feedback via the written sheet, graph, and verbal instructions while watching recorded videos with parents each week. Between individual coaching sessions, parents recorded probe videos of themselves practicing implementation of strategies addressed with their children and uploaded two 3-minutes videos per week to a cloud server folder. The coach met parents via videoconference every one or two weeks, depending on their schedule. After parents participated via videoconference and received feedback of implementation from the coach, each parent practiced and implemented the skills during the week in their living room (Dyad A, B, and C), kitchen (Dyad A), and dining room (Dyad B).

The varieties of toys and activities were chosen by parents and used during all data collection sessions while practicing communication skills. Dyad A used a child's preferred activities, for example, cooking and talking about her favorite things from school. Dyad B and C used their preferred toys such as puzzles, movies, or games. The augmentative and alternative applications on tablet computers were used for Dyad B. This material was created and displayed on an iPad using the GoTalk NOW application (Attainment Company Inc., 2020). Then, each parent was coached through the telepractice program (Zoom) from their computer or tablet on how to use behavioral intervention skills in their natural routines with their child.

Coach
The first author served as a parent coach. She was a third-year doctoral student in the special education program at the time of conducting the study. She had experience working in communication skills with individuals with ASD for eight years and received training in the Applied Behavior Analysis intervention components. She obtained a Bachelor of Education in Early Childhood and Master of Science in Special Education. There was no prior relationship between the coach and all participants in the study.

Dependent Variables (DVs) and Measurement
The primary DVs was parent strategy implementation (e.g., incentivizing communication, modeling, prompting, expanding) for use of any of the strategies during a recording interval. The secondary DVs were individuals' targeted communication skills (e.g, asking questions, requesting items, and expanding answers). We calculated and graphed any children's targeted communication skills (which included both prompted plus independent behaviors) and independent targeted communication skills. Both DVs were measured by using 10-second partial interval video recording for 3-minute lengths. The coach and the observers collected data from the recorded videos. The percentages were measured and calculated by dividing the interval of behaviors' occurrence with the total overall of 3 minutes interval (18 intervals), then this number was multiplied by 100 to calculate percentages. See Table 2 for operational behavioral definitions of parent and child behaviors.

Table 2

Definitions of Operational Behavioral for Each Parent and Child

	Parent behavior	Children Behaviors, Settings, Materials, and Generalization Details
Dyad A Adora Adrian	**Incentivizing Communication** · Arrange environment to elicit target behavior (i.e., introducing new items or new topic) · Give a child social praise when a child asks the questions **Modeling** · Verbally model questions to the child **Prompting** · Verbally prompt the child to ask questions (e.g., "Ask me ___", "Say___") **Expanding** · Model or prompt for longer questions or different types of questions.	**Asking questions goals** · The child asks context-appropriate questions to communication partners. **Setting** · Natural setting inside the house (i.e., living room, kitchen, and dining area). **Materials** · The child's preferred items or activities (i.e., cooking, talking about her favorite items). **Generalization** · Having a conversation with her sister and dad.
Dyad B Banita Bane	**Incentivizing Communication** · Arrange environment to elicit target behavior (i.e., enticing him with his favorite toys, introducing new items) · Give a child social praise when a child requests item **Modeling** · Verbally model requesting items or model how to use AAC (i.e. pressing the icon on the tablet) **Prompting** · Verbally or gestural prompt the child to request items (e.g., "Say___", pointing to the icon on the tablet) **Expanding** · Model or prompt for longer words requesting	**Requesting items verbally or using AAC device** · The child requests by using at least one word verbally or by using AAC for the item he wants. **Setting** · Natural setting inside the house (i.e., living room bedroom, and dining area for generalization session). **Materials** · The child's preferred items (i.e., ball, puzzle, flashcards). · Tablet with the AAC application (Go Talk Now) **Generalization** · Requesting items in different activities (e.g., dinner time)
Dyad C Carly Camilo	**Incentivizing Communication** · Arrange environment to elicit target behavior (i.e., introduce news topic) · Give a child social praise when a child expands his answer or initiating topic **Modeling** · Verbally model sentences to the child **Prompting** · Verbally prompt the child to expand his answers (i.e.., "Say___", "Tell me more about him") **Expanding** · Model or prompt the child for a longer sentence.	**Expanding his answer or initiating topic** · After communication partners ask questions to the child, the child verbally answers the question and also makes a statement to expand his answer or initiating topic with his communication partners. **Setting** · Natural setting inside the house (i.e., living room and bedroom). **Materials** · The child's preferred items and activities (i.e., games, movies). **Generalization** · Having a conversation with his brother.

Study Procedures

Parents received an online webinar session for 1 hour to learn about the basic information of communication strategies before enrollment in the study, however, the online webinar did not count as an intervention for the study. The online webinar was self-paced learning that parents could access anytime at their convenience. The content of the webinar included the strategies and examples of scenarios which parents could implement to their child at home (e.g., incentivizing communication, modeling, prompting, time-delay, expanding). The instructional activities were verbal instruction through slide handouts, scenarios examples, practice activities, and pre- and post-quiz assessments.

For the baseline phase, the coach did not give any implementing strategies, feedback, or any interventions to participants. The coach requested parents to record and upload two 3-minute videos per week before the coaching sessions began to show their usual communication with their child. For Dyad C, parents were allowed to provide communication devices that they usually used with the child.

Regarding the coaching behavioral intervention phase, the coach created the written treatment plan and discussed the children's communication goals based on parents' priorities before starting the individual coaching sessions. The coach provided coaching sessions through a videoconference program (i.e., Zoom) for approximately one hour per week per session for a total of 8 sessions. Each parent was coached behavior intervention strategies for improving communication which are incentivizing communication, modeling, prompting, time delay, and expanding. The coach provided written feedback regarding parents' performance in the previous video,

highlighting pointers for how to better implement some of the strategy's steps. The coach also provided verbal instructions regarding the written feedback, models how to perform the skills highlighted in the feedback sheet, practiced role play how to perform the skills, and explained the graph to the parents in the easy way to understand. If the data of parents' behaviors and individuals' behaviors were improved compared to baseline increased in the last three coaching sessions, the coach decided to start a maintenance session; however, if the coach and parent decided more coaching was needed due to minimal or no improvement, coaching was extended for two sessions prior to the maintenance phase.

Following the last session of the coaching session, the coach conducted maintenance sessions by receiving the 3-minutes recorded videos from parents for two data points at 3 and 6 weeks. Parents still implemented the behavioral intervention to their child without receiving any coaching sessions from the coach. However, the booster instructions session, used the same strategies as the coaching behavioral intervention session and were provided after the last maintenance session (week 6) if the data in maintenance sessions were decreased. The goals of communications in the maintenance phase were the same as the goals in the intervention.

For generalization, each parent implemented behavioral intervention skills to their child across different activities and communicative partners based on their preference but different from the coaching phases, selected in discussion between the parent and coach. The coach requested parents to implement and record 3-minute videos across baseline, intervention, and maintenance phase for 1-3 sessions. For Dyad A and C, the parents implemented skills in the generalization phase with different communicative partners

(i.e., father and sister for Dyad A, brother for Dyad C). For Dyad B, the parent implemented skills in the generalization phase with different activities and setting (dinner or snack time).

Inter-observer Agreement (IOA*)*
The coach measured IOA for at least 27% (27%-50%) of data points within each phase of baseline, coaching intervention, maintenance, and generalization phases or data for each participant. IOA were collected by three coders who were doctoral students in special education. Before each coder independently conducted IOA, they were trained on the definition operation of behaviors and skills by the coach (the first author) to obtain 80% or higher of IOA scores. IOA scores of agreement were calculated by dividing the overall agreed number from both coders by the sum of agreement and disagreements, then multiplied by 100 to receive the percentage. Overall IOA score was greater than 80% for all parents' observation for each phase (e.g., baseline, intervention, maintenance).

Procedural Fidelity
All video conference meetings of baseline and intervention sessions were recorded while the coach implemented skills teaching to each parent. Videos were randomly chosen from each phase (baseline and intervention) by the coach for procedural fidelity evaluation. Two observers watched the videos and evaluated the coach's implementation fidelity from the recorded videos. Procedural fidelity data were broken by each phase and participants. For the baseline session, the procedural fidelity checklist included criteria to ensure that the coach did not teach or provide any instructions or feedback regarding performance of independent variables (coaching on parent implementation of naturalistic interventions). Instead, the coach

only instructed parents how to record baseline and generalization videos. For the intervention session, the focus of the procedural fidelity checklist was the coach's written and verbal feedback about parents' performance of independent variables on the recorded video, including their observations about parents' implementation of all the protocol steps (incentivizing communication, modeling, prompting, time delay, and expanding). Checklists also recorded whether the coach provided model and/or role play to teach protocol steps for each parent. Procedural integrity data was collected for both baseline and intervention phases in 25%-100% of sessions. Procedural integrity scores for all sessions were 100% accurate across all participants. Procedural integrity IOA scores were also collected for 30% of sessions and were 100% accurate across all sessions.

Social Validity
There were two social validity anonymous parent surveys that were collected to measure the feasibility and efficiency of the telepractice parents coaching in behavioral intervention via naturalistic interventions in families with adolescents and adults with ASD. The first survey, a short checklist and answer survey, was collected during the intervention sessions (every other intervention session per week). The short survey included four items that parents could response on 5-point Likert scale out of 5.00 (e.g., 5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, 1 = strongly disagree) and three open-ended questions to ask parents about the feasibility of parent coaching intervention and their additional comments. The researcher used the results score and comments from this weekly survey to adapt the followed intervention sessions. The second survey, a long checklist and answer survey, was collected after the last session of coaching intervention session. The

long survey included 18 items and four open-ended questions. The short and the long survey were developed from the Treatment Evaluation Inventory Short Form (TEI-SF; Kelley et al., 1989) and Parent Satisfaction Survey (Washburn, 2012).

Data Analysis
Visual Analysis
Data for both DVs, the parent implementation of skills and individuals' behaviors, were graphed. The data were analyzed for level, trend, and variability of data points, across and within phases, including baseline, intervention, and maintenance.

Effect Size
The effect size calculation was chosen for evaluating the degree of the effects between baseline and intervention phases for each parent and child dependent variable while adjusting for undesirable baseline trends. Tau-U was used for calculating effect size with the range -1.0 to 1.0 for each parent implementation of each intervention component and each child's communication behaviors (Vannest et al., 2016). Tau-U is a measure of the magnitude of effects of an intervention, which can adjust for baseline trends and control for unexpected baseline trends. Moreover, Tau-U is chosen because it is robust, defensible, and demonstrates strong correlations with visual analysis when calculating effect sizes (Parker et al., 2011a; Zimmerman et al., 2018). A negative effect size score presents a decrease of both dependent variables, and a positive effect size score presents an increase of both dependent variables (Parker et al., 2011b).

Correlation
Correlation data will be reported by using the Pearson's correlation coefficient (r) in STATA® (StataCorp, 2017) to determine the relationship between use of parent strategy implementation (e.g., incentivizing, modeling, prompting, and expanding) and children's target communication skills. Children's targeted communication skills variables are distal outcomes; therefore, we cannot make a decision regarding the presence of a functional relation between the coaching intervention and child outcomes; however, we report the correlation to provide insight on the appearance of the children's communication skills alongside the parents' use of targeted strategies for instruction of their children.

Results
The researcher established a functional relation between the intervention (i.e., telehealth parent-coaching) and parent strategy implementation (i.e., incentivizing, modeling, prompting, and expanding) with three demonstrations of effect (see Figure 1). Although there was some variability across all three participants, there was a positive level change for all three participants for use of any parent strategy implementation between baseline and intervention. All three parents' data seem to have fairly level trends in data compared to baseline to intervention phase. The omnibus Tau-U for use of parent strategy implementation was 1.00*, indicating the telepractice coaching intervention had a strong effect.

Figure 2 displays data for children, Adrian, Bane, and Camilo, on use of any children's targeted communication skills (prompted plus independent) and independent targeted communication skills. There was a positive level change and increasing trend for all three participants for targeted communication skills comparing baseline to intervention phases. For independent targeted communication skills in children, the overall omnibus Tau-U was 0.80*, indicating 80% of all sessions displayed improvement between

Figure 1

Any Use of Parent Strategy Implementation (e.g., incentivizing, modeling, prompting, and expanding) (top panel)
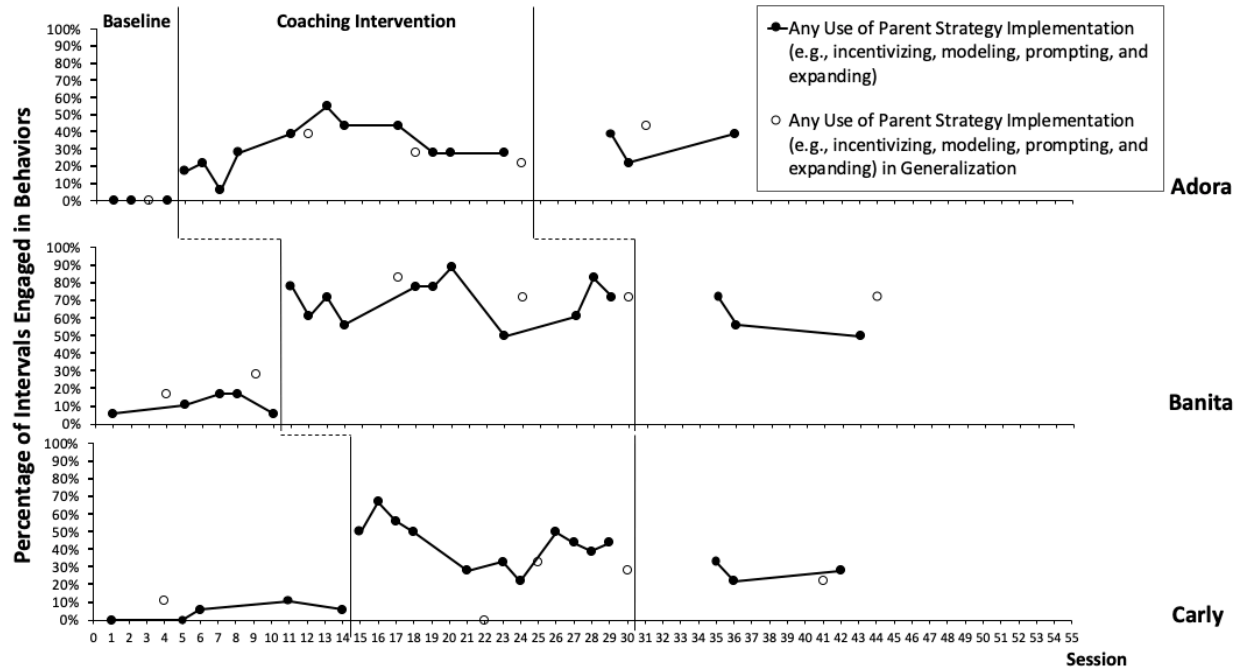
baseline phase and intervention and had a moderate to strong effect.

Generalization probes conducted across different people and settings are also included across baseline and intervention sessions for all three dyads. The data for both parents and children in generalization probes in each phase are similar in level to the baseline, intervention, and maintenance phase data for the targeted contexts and people. The findings of correlation indicated a significant strong positive correlation between overall parent strategy implementation and their children's targeted communication skills.

Visual Analysis and Effect Size

For parent strategy implementation, Adora's used none of parent strategy implementation during baseline. Banita and Carly used some

of the skills, but at low levels during baseline. During the intervention phase there was moderate variability and an increasing trend. For all three parents, there was an immediate positive level change between baseline to intervention and these levels are maintained from intervention to the maintenance phase. Overall, the data in all phases were variable, with the exception of their baseline. This was as anticipated, due to implementation by natural communication partners and the authentic contexts in which this intervention was implemented. Generalization data overall are similar to the dependent variable data in baseline, intervention, and maintenance phases. The overall Tau-*U* for parent strategy implementation was 1.00* with CI [0.60, 1.00]. The Tau-*U* for each participant; Adora, Banita, Carly; was all 1.00* with CI [0.36, 1.00], CI [0.47, 1.00], and CI [0.47, 1.00], respectively.

Figure 2

Children Targeted Communication Skills
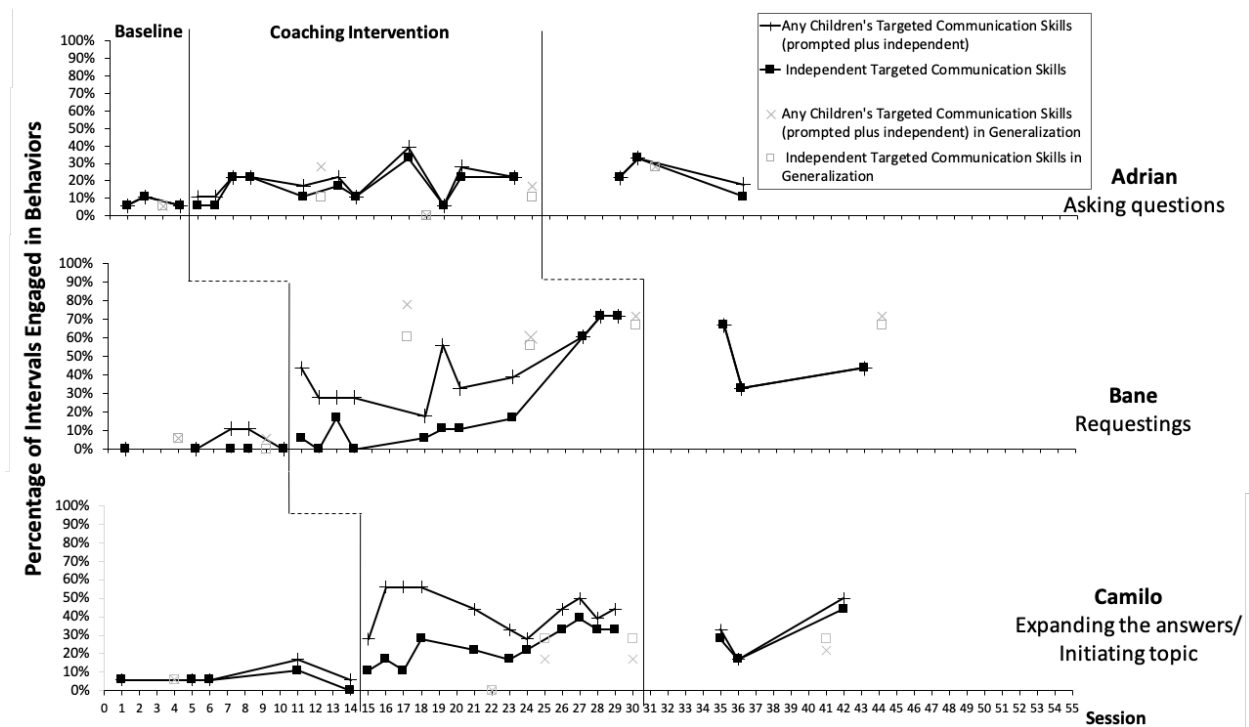
Regarding Children's targeted communication skills, during the baseline phase, Adrain's and Camilo's independent communication skills showed at very low levels with stable trend and little variability. For Bane, there are no communication behaviors during baseline. During the intervention phase, there was an immediate positive level change between baseline to intervention and these levels are maintained from intervention to the maintenance phase for all three participants. That said, Adiran's improvements, while apparent, may be considered to be modest. For all the children participants, generalization data overall are similar to the primary dependent variable data in baseline, intervention, and maintenance phases with the exception of one generalization data point at 0% in the intervention phase for Adrain and Camilo.

The effect size for Adrian, Bane, and Camilo demonstrated a moderate effect size of 0.58 [-0.07, 1.00] ($p = 0.14$) for asking questions, a high effect size with 0.82* [0.29, 1.00] for requesting items, and a high effect size with 0.96* [0.44, 1.00] for making a statement to expand his answer.

Correlation

The Pearson's correlation coefficient indicated a significant strong positive correlation between omnibus parent strategy implementation (i.e., incentivizing, modeling, prompting, and expanding) and their children's use of any targeted communication skills (prompted plus independent) ($r = .786$, $p = .000$). Also, there was a moderate positive correlation between parent use of strategy implementation and children's independent targeted

communication skills ($r = .568$, $p = .000$). See details for a scatter plot of Pearson's correlation and the results of the correlational analysis between parents' use of strategy implementation and children's targeted communication skills in Figure 3.

Social Validity

Parents provided overall positive feedback on the two parent surveys, indicating agreed or strongly agreed on all items. An average score of 4.52 (range = 4.00 - 5.00) out of 5.00 was obtained for the short surveys across three parents, given at three different times during the intervention sessions. All three parents provided consistently positive feedback during the interventions (e.g., *"This is great fun and very helpful for my child!"*, *"Child asks many more independent questions than prior to intervention"*). There

were no changes needed related to intervention procedures, based on parent comments during intervention.

The long survey collected at the end of the study had an average survey score of 4.50 and 4.76 (range between 4.00-5.00) out of 5.00 for the webinar sessions and individual coaching sessions, respectively, which indicated that parents agreed and strongly agreed to the benefits of the intervention. All parents rated the highest scores with strongly agreed related to the ease of intervention to use at home with their child, the helpfulness of coaching strategies to improve interactions with their children, and efficiency and cost-effectiveness of the telepractice parent coaching. Parents provided written feedback

Figure 3

Scatter Plot of Pearson's Correlation between Parent Strategy Implementation and the Children's Targeted Communication Skills with Prompted plus Independent (left graph) and Independent (right graph)

Children's Targeted Communication Skills (Prompted plus Independent)	Children's Targeted Communication Skill (Independent)
.786***	.568***
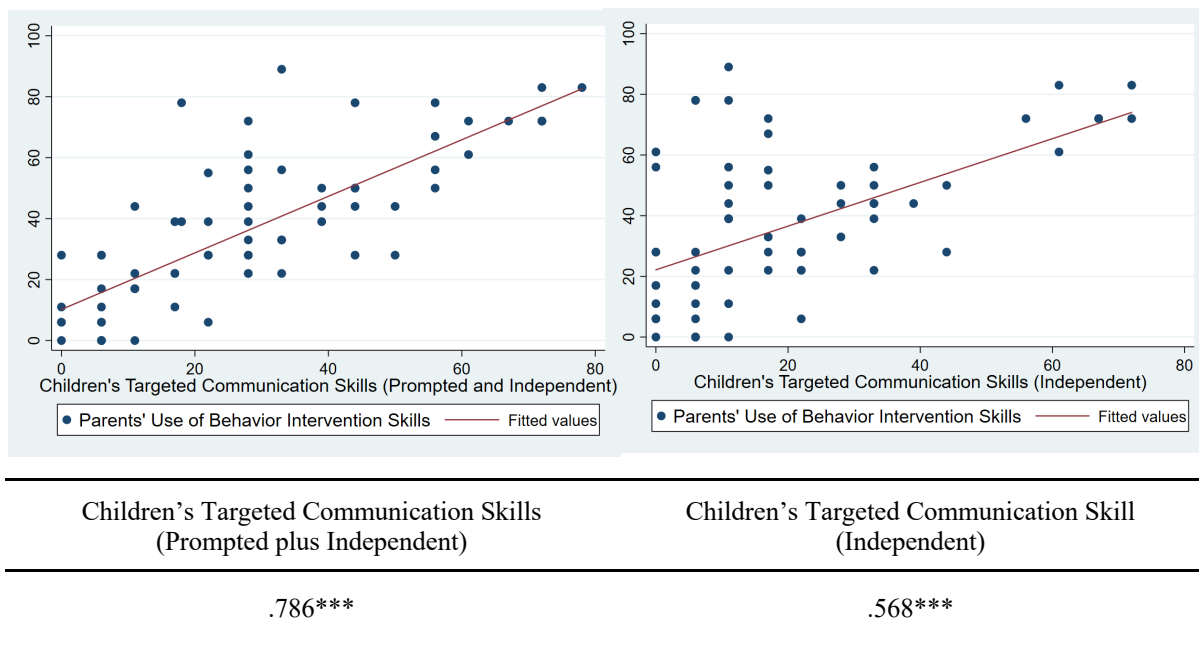
*$p < .05.$, **$p < .01.$ ***$p < .001.$

that indicated they were satisfied with the parent coaching intervention and there was nothing that they wanted to change. For example, parents mentioned, "I have more opportunity to talk to my son, it was very impressive", "He can talk about what he is going to do or what he wants to do", "It is great that we can talk to each other."

Discussion

The overall results from this study indicated positive effects of using telepractice parent coaching to teach parents of adolescents and adults with ASD communication skills strategies. The findings demonstrated a clear functional relation between telepractice parent coaching to parent strategy implementation and showed an improvement of their children's communication skills. The findings were consistent across all of the parent participants who completed the intervention. It is also notable that as the parents increased their use of behavior components, children's independent use of communication skills improved. These findings are consistent with previous research which found that telepractice parent coaching are effective procedures for children ages 3-8 years (Bearss et al., 2018; Vismara et al., 2018; Wainer & Ingersoll, 2015). Furthermore, this work further demonstrates that parents with adolescents and adults can be successfully coached to implement communication skills to their children with a satisfactory degree of fidelity (Hong et al., 2019). Thus, the findings from the current study showed that a telepractice parent coaching procedure can also lead to an increase in communication behaviors for adolescents and adults diagnosed with ASD.

We also measured the distal child outcomes and assessed the correlation between parent's implementation and children's communication skills. Further, there are few prior studies on parent coaching in any

intervention for communication skills for individuals with ASD and IDD that included adolescents and adults with autism (Dogan et al., 2017; Hong et al., 2014; Levinger, 2012).

This work makes a number of unique contributions to literature. One of the strengths of this work was the delivery of training on naturalistic interventions from a distance via telepractice, allowing for acceptability, saving time, money, and insurance reimbursement for travel (Heitzman-Powell, 2014). Telepractice procedure has the potential to support in-person coaching interventions and can help researchers and professionals provide outreach to many families in rural areas without increasing time and cost (Akamoglu et al., 2019). Another unique point was the collection of the social validity during the intervention which determined the parents' understanding of the content and activities in the parent coaching sessions. The survey also determined how feasibility and social significance affected their child at home every week during the intervention. The results of the survey allowed us to know if the parents were unsatisfied with the intervention. Moreover, social validity could be the tool that parents use to review themselves and how they implement the necessary skills throughout the intervention. Researchers should evaluate the social acceptance and feasibility of telepractice services; it can help researchers understand whether this mode of service delivery is acceptable or not (Akamoglu et al., 2019).

Implications for Practice

Some implications of this work can be noted. Using the telepractice parent-coaching procedure could provide efficient and cost-effective services and save travel time for families (Benson et al., 2018; Heitzman-Powell, et al., 2014). There are very few services that focus on communication skills

for adolescents and adults with ASD. This intervention can help parents of this population address their child's communication skills and implement services in their natural settings. Research suggests that naturalistic interventions have the potential to increase social and communication skills in adolescents and adults with autism (Ingersoll et al., 2013; Zeedyk et al., 2009). Moreover, it is very important to provide high-speed internet access that provides intervention services in rural areas at an acceptable price to families of individuals with ASD. Lastly, during the COVID-19 pandemic, delivering services to this population and their families is more difficult due to disruptions in intervention continuity and limitations on in-person intervention practices. Telepractice mode is used as an essential means for service providers to deliver intervention or assessments remotely due to social distancing. The fact that this study focuses on using telepractice was not only timely, but extremely relevant to the field and current situation related to the pandemic.

Limitations and Directions for Future Research

There are some limitations in this study. First, the study reported both parents and child outcomes (i.e., distal targets); however, we are unable to make a determination of a functional relation between telepractice parent coaching and their child outcomes because the child outcomes are distal targets. Second, the data on parent's implementation were highly variable, which was in our expectations because parents were instructed to teach their child in authentic and natural environments; however, this makes visual analysis more challenging. Third, there were technical issues for one parent of recording and uploading the videos. This was resolved; however, the issue of the file's sizes and her phone's available space is indicative of the

limitations of this work given disparities in technology access for parents. Fourth, although we collected parents' social validity surveys during and at the end of the intervention, we did not collect social validity surveys for the individuals with ASD participants. Last, we cannot confirm how often the parents practiced parent strategy implementation during the week outside of the recorded video due to the fact that we requested only two videos per week, with 3-minute length per video. Also, we do not know if parents recorded several videos and uploaded the perfect videos in which parents used many parent strategies.

This study suggests several areas for future research. First, the results of this study showed that educators could use telepractice coaching intervention for parents with adolescents and adults with ASD to implement naturalistic interventions for social communication skills; however, researchers could extend telepractice coaching to different skills such as conducting functional analyses of problem behavior or conducting in-home functional communication training to teach adolescents and adults, specifically (Suess et al., 2014; Wacker et al., 2014). Second, a further parent coaching study is needed in order to develop efficient and acceptable interventions to solve the barriers that parents with adolescents and adults with ASD met during the telepractice service delivery mode procedure. Researchers also needed to find out the best strategies for educators to provide telepractice coaching to parents. Third, we conducted generalization sessions in this study with only one type of either different activities or different people. Further studies need to conduct generalization sessions in many types of contexts, materials, activities, and people to expand the communication behaviors of adolescents and adults with ASD. Fourth, not

only parent participants should provide feedback on the social validity surveys, but also adolescent and adult participants should have opportunities to complete the surveys to determine whether or not the parent coaching intervention was considered socially acceptable.

This current study extends prior research by including parents with adolescents and adults with ASD and examining the effects of telepractice parent coaching in naturalistic interventions in communication skills for their children. Overall, findings from this study showed that parents of adolescents and adults with ASD were able to be coached and maintained the use of communication skills for their children after the intervention. This shows that parents are able to be an effective coach for their adolescents and adults with ASD

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Using Contingency Space Analysis as Another Option for Assessing Variables Maintaining Challenging Behavior

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Abstract: Behavior analysts may be employed in school settings where their role is to assess and support a large caseload of students with behavioral challenges who engage in low- to mid-intensity challenging behavior. Traditional assessment tools such as descriptive assessments (e.g., ABC data collection) may be too cumbersome and imprecise. However, functional analyses, while precise, may be too resource-intensive to conduct in typical school settings. We describe contingency space analysis (CSA; Martens et al., 2008) as an alternative descriptive assessment. CSA can be used to efficiently and effectively deduce the probability of challenging behavior occurring relative to certain consequences (e.g., attention, escape). This article describes how to plan, implement, and interpret the results of contingency space analyses in order to make function-based treatment recommendations in school settings.

Functional analyses (FA) are considered the gold standard for behavioral assessment (Lloyd et al., 2016), however, research indicates that board certified behavior analysts (BCBAs) do not always use FA in clinical practice (Oliver et al., 2015). Oliver and colleagues (2015) completed a nationwide survey of behavior analysts. Only 36% of respondents reported using functional analyses "always" or "almost always" in their clinical practice. Respondents reported the following barriers to conducting FA: lack of space, lack of trained staff to assist, and lack of support or acceptance of FA as an assessment procedure. Due to these obstacles, practitioners rely heavily on descriptive assessments (DAs) as 94% of BCBAs reported using DAs "always" or "almost always." Contingency space analysis (CSA) is a DA approach that involves calculating conditional probabilities based on the relations between behaviors and consequences observed during sequential observations (Martens et al., 2008). The purpose of this article is to describe where CSA fits in the Functional Behavior Assessment (FBA) process, provide a rationale for the use of CSA as a better alternative to other descriptive assessments, and explain the process for conducting and interpreting the results of CSA with children with developmental disabilities in the classroom.

Behavior analysts working with students with developmental disabilities may be tasked with assessing and treating low- to mid-intensity problem behavior. FBA is a research-supported process used to evaluate environmental events that evoke and sustain challenging behavior (What Works Clearinghouse, 2016). An FBA is designed to be completed in the individual's natural environment. Through the FBA process, practitioners can identify functions of challenging behavior and design behavior interventions that increase the use of appropriate behaviors that achieve the same function (Scott & Cooper, 2017).

The first step in completing an FBA is to develop operational definitions of all

behaviors targeted for change. This includes defining behaviors targeted for reduction as well as replacement behaviors to be increased. Once the practitioner develops operational definitions, they select the relevant dimension of behavior to be measured (e.g., frequency, duration) and a suitable recording method (Miltenberger, 2005). Behaviors of interest are measured repeatedly across hours, days, or weeks in order to establish a pattern of current levels of responding (Scott & Cooper, 2017).

The third step of an FBA is to conduct assessments in order to determine the function of targeted behaviors. One option is to use indirect assessments to gather further information on the environmental events occurring before and after targeted behaviors (Lloyd et al., 2016). Indirect assessments include practitioner interviews with caregivers, service providers, and client perceptions regarding the antecedents and consequences of problem behavior (Scott & Cooper, 2017). Questionnaires and rating scales may also be used to gather information. Some rating scales specifically investigate probable functions of problem behavior, such as the Questions About Behavior Functions (QABF; Matson, & Vollmer, 1995) and the Problem Behavior Questionnaire (PBQ; Lewis et al., 1994). Indirect assessments are problematic when used as the sole information source for determining function because they rely on retrospective accounts of the behavior occurrence, which may not be entirely accurate (Kern et al., 2005; Martens et al., 2008).

Given the potential lack of reliability with relying solely on indirect assessments, school-based behavior analysts should (and often do) conduct descriptive assessments of challenging behavior. Descriptive assessments include direct observation of the antecedents and consequences occurring immediately before and after challenging behavior, but without any systematic manipulations of those variables (Hanley, 2012). ABC recording is one such recording method and is commonly used in the FBA process (Kern et al., 2005). Kern and colleagues describe ABC data recording as an arrangement where data on the antecedents (A) and consequences (Cs) are recorded relative to behavior (B). ABC data recording may also describe the context for the behavior, the behavior's intensity, and whether behavior stopped or continued based on the applied consequence (Kern et al., 2005). One issue with ABC recording is that it may be too cumbersome to record high frequency behaviors. Second, it may be difficult to deduce the environmental events contributing to problem behavior due to the sheer number of possible antecedents and consequences occurring in the classroom at any one time (Lloyd et al., 2017). For example, adult attention may frequently occur contingent on a student's problem behavior in addition to other (perhaps less obvious) environmental stimuli, which may result in an overidentification of attention as the maintaining consequence of problem behavior (Cipani, 2018). Finally, ABC data collection does not inform the practitioner about environmental events that may be in effect when problem behavior is absent (Martens et al., 2008).

Hypothesis testing in the form of functional analyses (FA) is another option. Broadly, FAs are systematic manipulations of antecedents and consequences in order to test and confirm a functional relation with problem behavior (Hanley et al., 2003). FAs may be useful when interviews, questionnaires, and ABC recording do not clarify the probable functions of behavior. However, FAs are more labor intensive than other descriptive assessments and likely

require extensive involvement from the behavior analyst to plan and direct the FA (Lloyd et al., 2016; Matson & Minshawni, 2006). This may not be practical for school-based practitioners with large caseloads who may not have the resources to conduct lengthy assessments for any one student. Second, FAs typically require systematic reinforcement of problem behavior under varying test conditions, which may not be tolerable to individuals within the student's classroom (Lloyd et al., 2016). Third, students with average cognitive ability or higher incidence disabilities may become wise to the antecedent and consequence manipulations, which can compromise FA results (Martens et al., 2008; Matson & Minshawni, 2006).

Severe, high-intensity problem behaviors likely require our most rigorous assessments (e.g., FAs) that, when designed and implemented effectively, produce unequivocal results regarding behavior function. However, for less intensive problem behaviors, descriptive assessment methods can be used to deduce the probable function of problem behavior that also bypass some of the pitfalls of relying solely on ABC data collection. We present CSA as one such option for practitioners working in school settings. CSA is a descriptive assessment that seeks to identify environmental events that are contiguous to the occurrence of a target behavior (Martens et al., 2008). In other words, CSA seeks to identify environmental events that occur within close temporal proximity, short of making the assumption that one event is contingent upon the other. With more refined analysis of event temporal proximity, the practitioner can calculate conditional probabilities of two environmental events (i.e., if *A* occurs, then *B* also occurs). For example, using the data generated by the CSA, the practitioner can calculate the likelihood of one event (student

shouting out an answer) and another event (teacher attention) occurring together. Additionally, the practitioner can calculate the likelihood of one event (teacher attention) occurring in the absence of another challenging behavior.

Since CSA is a descriptive assessment, it does not rely on experimental manipulations to test and confirm hypotheses regarding behavioral function. However, without experimental manipulations, CSA does not provide the same level of certainty regarding functions as FA. Instead, results from CSA can be used to define antecedent-behavior and behavior-consequence contiguities, which may *suggest* possible function but do not definitively determine function as well as FA. When results of the CSA are inconclusive or when problem behavior is dangerous or of high intensity, the practitioner should utilize FA-type assessments to determine function(s) of behavior.

The following section will describe the steps of implementing CSA to assess low-intensity challenging behavior of students (Figure 1). In this vignette, a behavior analyst and her team are consulting in a classroom in order to assist a general education teacher with increasing one student's on-task behavior. We describe the steps the behavior analyst took in collaboration with the teacher to identify and define challenging behavior and collect data on those behaviors. Next, we will review the steps for calculating and plotting the probabilities. Finally, we will overview how to interpret the data in a meaningful way and briefly discuss treatment based on the results. We provide the vignette to illustrate the process.

Method
Participants and Setting
The CSA took place at a private school in a

Figure 1
CSA process flow chart
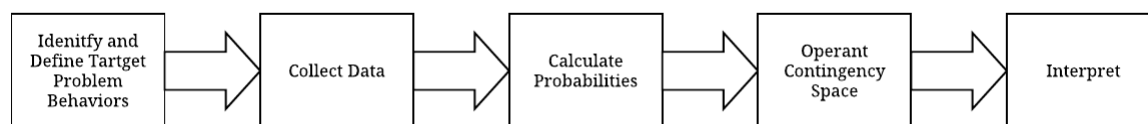
small city in the southeast United States. Administration from the private school contacted a behavior analyst from the university to assist a teacher with addressing some of the school's behavioral needs. The behavior analyst and her team of two graduate students worked with the classroom teacher to evaluate and treat the challenging behavior. After an intake meeting with the teacher and administrators, the team decided to focus their attention on Anthony, a first-grade, African American male student engaging in off-task behavior.

Target Behaviors
First, the behavior analyst and her team worked with the classroom teacher to identify and define Anthony's target challenging behavior. For the purpose of conducting the CSA, the team operationalized two mutually exclusive and exhaustive behavior categories that identified what the behavior was and was not. The teacher's primary concern was Anthony's off-task behavior, so the team clearly defined off-task and on-task behavior. Other mutually exclusive and exhaustive behaviors that could be targeted in a CSA include in-seat/out-of-seat and body oriented toward instruction/body oriented away from instruction. The team defined off-task as *talking to other adults or peers when he was supposed to be working, looking away from his assignment or learning materials, and getting out of his seat without permission* and on-task as *working silently as assigned,*

looking at his assignment or source material, and staying in his assigned work area. After initial observations in the classroom, the team determined these definitions to be clear and measurable, allowing for reliability in data collection.

Data Collection
After determining the target challenging behaviors, the team scheduled times to observe and collect CSA data across various activities and multiple days. For the purpose of this CSA, at least two therapists conducted the observations, but this is not necessary for primary data collection purposes. For CSA data collection, the team used an interval timer smartphone application, two sets of headphones, a headphone splitter (only necessary with multiple data collectors), writing utensils, and data sheets. Figure 2 is an example of a completed data sheet. The behavior analyst and her team collected data across five 10 min sessions for a total of 50 minutes across several school days. Martens and colleagues (2008) recommend observing between 50 and 300 min in order to obtain a large enough sample to be representative of the challenging behavior. The team sat in the back of the classroom while the teacher continued instruction. Upon entry, the team delayed data collection to minimize any potential observer effects. The student of interest was also familiar with the team due to previous observations that took place during behavior definition development. At

the start of each session, the team started the interval timer app. The app notified the team wearing headphones every 15 s. Within each 15 s interval the team observed the student. A "+" was recorded if the student was engaging in the challenging behavior (i.e., the student was engaged in off-task behavior). On the same row, the team noted whether the student was receiving attention or escaping from an activity or assignment by noting a + in the corresponding column. If practitioners hypothesized positive reinforcement in the form of access to tangibles was a maintaining variable, this could also be coded during the CSA. If more than one possible consequence was observed, the observer selected the consequence that occurred in closest temporal proximity to the occurrence of challenging behavior. If the observer could not detect a consequence or if the observer suspected that the teacher was ignoring the problem behavior or if the consequence was non-discernible, then the observer marked a + in the other/non-coded column. While this coding category is an option, practitioners should focus on coding attention or escape first, reserving this as a last resort. If problem behavior did not occur within the 15 sec interval (i.e., the student was engaged in on-

task behavior), a 0 was recorded in the first column at the end of the interval. The team then recorded the one most relevant consequence occurring in the absence of problem behavior, using the same procedure described above. The team continued these steps for each 15-s interval in the 10-min observation session.

Calculating Probabilities
After completing the observations, the behavior analyst and her team began the process of analyzing the data. The team used tables similar to Table 1 to calculate the probabilities. Each consequence required its own table. First, the team counted all the intervals where the challenging behavior was present and absent. The team verified they counted correctly by adding the two numbers and ensuring that number matched the total intervals. The number of intervals where the behavior was present was placed in cell A and the number of intervals where the behavior was absent was placed in cell B for each chart. For the third column, the team counted the number of intervals where the behavior was present, and the consequence was present and placed this number in cell C. Next, for cell D the team counted and

Figure 2. *A sample portion of a completed CSA data sheet*

Name: Anthony	**Date:** 09/20/2015				**Start:** 9:00 AM **End:** 9:10 AM
present + absent 0	off task		attention (peer or teacher)	escape	other/non-coded (e.g., ignore)
:15	+		+	0	0
:30	+		+	0	0
:45	+		+	0	0
1:00	0		0	+	0
1:15	0		0	+	0
1:30	+		0	0	0
1:45	+		+	0	0
2:00	0		0	0	+

recorded the number of intervals where the behavior was absent, and the consequence was present. Finally, the team calculated cells E and F by dividing C by A and D by B consecutively. The results for each function are presented in Table 2. These numbers were used for the next step, graphing probabilities, and represent the probability of the behavior occurring or not occurring given the occurrence of the consequence.

Graphing Probabilities

The last step before interpreting the data is plotting the probabilities in the operant contingency space or scatterplot. The team calculated the probabilities of the behavior occurring and not occurring in the presence of each contingency, cells E and F. Based on teacher interview and initial observations, they initially hypothesized three functions for challenging behavior: attention, escape and other/non-coded. The conditional probability of each hypothesized function was calculated individually. Next, the team plotted the coordinates for each hypothesized function (i.e., probability of function occurring in the presence and absence of challenging behavior) on the operant contingency space using different symbols for each function. Figure 3 depicts a sample operant contingency space. The origin, or the bottom left corner is always zero and the y- and x-axis extend to one with the line broken into 0.10 increments. The team used cells E and F to locate and plot each data point. Each function should be plotted similarly to plotting coordinates on the plane (e.g. Escape [F, E]) by going across the graph the value of F and up the graph the value of E. The team used an author developed spreadsheet

Table 1. *Calculating Probabilities*

	Total Count of Intervals (B)	Total Count of Intervals where the Consequence was occurring (B+C)	P(B+C)/B Or P(consequence/B)
Calculating Probabilities			
Behavior Present	A	C	E
Behavior Absent	B	D	F
Completed Probabilities Table: Attention			
Behavior Present	64	28	0.44
Behavior Absent	198	67	0.34
Completed Probabilities Table: Escape			
Behavior Present	64	11	0.17
Behavior Absent	198	2	0.01
Completed Probabilities Table: Other/Non-Coded			
Behavior Present	64	22	0.34
Behavior Absent	198	132	0.67

program to calculate and graph probabilities. Readers can request the spreadsheet program by contacting the first author.

Results and Discussion
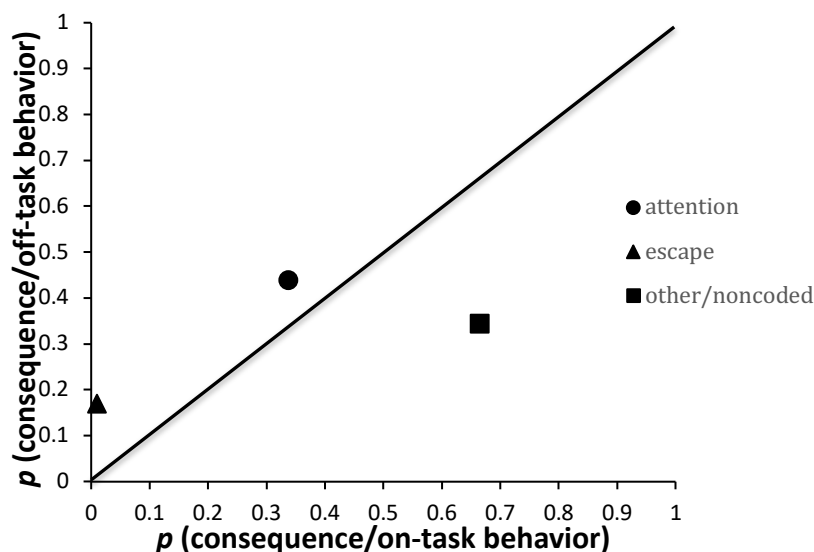### Interpreting Data
Before interpreting the data, it is important to understand the components of the CSA scatterplot because the scatterplot is different from most behavior analytic graphs. Similar to typical behavior analytic line graphs, there is an x-axis and y-axis. Unlike typical behavior analytic line graphs, a diagonal line (known as the *unity diagonal*), stretches across the graph from the origin, zero to the top right corner of the graph. Each data point represents a consequence and readers interpret the graph based on the location of each data point relative to the origin, unity diagonal, axes. Table 5 provides a summary of how to interpret data based on the various locations. Given this information, the team interpreted the graph in the following way: Anthony often accessed attention after

engaging in off-task behavior. Therefore, the team hypothesized that his off-task behavior was maintained by positive reinforcement in the form of adult attention. On the contrary, Anthony infrequently accessed escape therefore the team excluded this function from their hypothesis. The team also noted that Anthony rarely accessed adult attention when challenging behavior was not occurring (i.e., he was on-task), further supporting the hypothesis. This was evident based on the high probability of other/non-coded in the absence of problem behavior. Based on these results the team recommended a differential reinforcement procedure for on-task behavior. Rather than Anthony continue to access attention for off-task behavior, the team recommended that teachers provide attention when Anthony engaged in on-task behavior.

Summary of Findings
In this FBA, the team conducted a descriptive assessment known as a CSA in order to

Figure 3.

Sample Operant Contingency Space

Note. This figure depicts the contingency space analysis between off-task behavior and attention, escape, and other/non-coded for the sample student, Anthony.

Table 5. *Interpreting Data*

Location	Technical Interpretation	Non-technical explanation
On y-axis above diagonal	Dependent on target behavior	Consequence always occurs if the individual is engaged in off-task behavior.
Above the diagonal	Contingent on target behavior	Consequence often/sometimes occurs when the individual is engaged in off-task behavior.
On the diagonal	Independent of target behavior	Consequence occurs frequently regardless of whether or not the individual is engaged in on-task or off-task behavior.
Below the diagonal	Contingent on the non-occurrence of target behavior	Consequence mostly occurs when the individual engages in on-task behavior.
On x-axis below diagonal	Dependent on the non-occurrence of target behavior	Consequence only occurs when the individual engages in on-task behavior.
On the origin/close to the origin	Consequence occurs relatively infrequently regardless of target behavior.	The consequence rarely occurs.

identify events in the environment that occurred in close temporal proximity to Anthony's challenging behavior, off-task behavior (Martens et al., 2008). First, the behavior analyst worked collaboratively with teachers and administrators to identify and define the target behavior. Then, the behavior analyst and her team observed the student on multiple occasions and collected partial interval recording data on the occurrence or non-occurrence of challenging behavior and the presence and absence of various contingencies. The team calculated the probability of each contingency given the occurrence of challenging behavior and plotted those data on a scatterplot for interpretation. The calculations informed the probability or likelihood of various consequences occurring in the presence of off-task behavior. Based on the results, the team hypothesized that off-task behavior was maintained by access to adult attention and developed a plan to provide differential reinforcement of alternative behavior. The recommendation was to contrive opportunities for Anthony to receive positive adult attention when engaged in on-task behavior and limit any form of adult attention when engaged in off-task behavior.

Implications for Practitioners and Researchers

The purpose of this report was to describe the steps to conduct a CSA within a classroom, a common applied setting. In similar situations, behavioral clinicians may rely on other types of descriptive assessment such as ABC data recording, but this method may be thought of as cumbersome, difficult to interpret, and incomplete given the lack of information provided on events when challenging behavior is not occurring. Martens and colleagues (2008) first presented CSA as an approach for descriptive assessment based on previous applications (Gibbon et al., 1974; Matthews et al., 1987; Schwartz, 1989). Since then, Solnick & Ardoin (2010) called for additional investigation of CSAs due to the promise for application in applied settings (i.e., classrooms).

When challenging behavior does not warrant functional analysis, practitioners should incorporate CSAs to develop hypotheses and treatment recommendations. CSAs are low-cost and minimally invasive. CSA data collection requires minimal training allowing teachers and behavior analysts to rely on paraprofessionals and practicum students to collect data. Additionally, researchers should consider incorporating CSAs into FBAs to further evaluate the validity of this tool.

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Peer-Mediated Interventions in Inclusive Settings for Adolescents with Autism: A Synthesis of the Literature

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Abstract: A systematic review was conducted on the existing peer-reviewed literature base for peer-mediated interventions targeting social outcomes for middle and high school students with ASD from 2014-2018. The purpose of the review was to expand previous work from Chan et al. (2009) and Watkins et al. (2015) by including an analysis of more recent articles and applying current CEC standards. Eleven single-subject design studies met the inclusion criteria and were analyzed for 33 total participants with ASD. Studies were evaluated on their adherence to CEC standards, descriptive variables, peer training components, treatment fidelity, and results. Overall, PMI targeting social outcomes is a potentially evidenced-based practice with adolescents with ASD. Limitations to the review and implications for future research and practice are discussed.

Individuals with Autism Spectrum Disorder (ASD) are characterized by deficits in social interaction and communication and typically require individualized interventions to address these needs (Chan et al., 2009; NAC, 2015). One way we can address these needs is to identify evidence-based practices (EBP) for children with ASD. As students enter middle and high school, social demands increase, and these deficits can become more pronounced and lead to social isolation and peer rejection (Carter et al., 2014; Locke et al., 2010; Sreckovic et al. 2017). For students with ASD, social interactions with peers not only affect their academic and social success in school but have a lasting impact on their quality of life (Helseth & Misvaer, 2010). Given the importance of peer interactions and possible risks for students with ASD, there is a clear need for EBPs that can encourage positive social interactions between middle and high school students with ASD and their typically developing peers in school settings (Watkins et al., 2015).

The National Professional Development Center (NPDC) has evaluated multiple EBPs for individuals with ASD. Of these EBPs, peer-mediated intervention (PMI) is listed as an effective approach to target a range of skills across age groups. PMI has the unique feature of peers acting as intervention agents, making it well suited for naturalistic and inclusive settings (Hemmeter, 2000; Watkins et al., 2015). There are several advantages for use of PMI within educational settings: peers are readily available as intervention agents, and opportunities to practice skills across multiple social partners increases the likelihood of generalization (Carr & Darcy, 1990; Goldstein et al., 1992; Odom et al., 1999; Strain & Kohler, 1998). The shared responsibility between peers and teachers can help alleviate demands on staff, and the utilization of similar aged peers may have a collateral effect of forming social connections (Carter et al., 2013; Chan et al. 2009; Watkins et al., 2015). However, the specific conditions and populations that make

PMI an EBP remain unclear, which is imperative in order for practitioners to be able to meaningfully implement them in natural settings.

Previous Reviews

Two notable reviews (i.e., Chan et al., 2009 and Watkins et al., 2015) sought to identify what makes PMI an effective intervention for individuals with ASD. Overall, the dependent variables targeted were largely based on social interaction (88%). Although 91% of the studies reported positive effects, they deemed 28 of the study's results to be inconclusive and identified major limitations existed within the literature. Most importantly, most of the studies did not evaluate treatment fidelity, an essential component for PMI's implementation.

While Chan et al.'s (2009) review focused on children aged 2-12 years and a broad range of target skills, Watkin and colleagues (2015) sought to review the effectiveness of PMI in regard to initiations and responses for students with ASD in inclusive settings for all school-aged students with ASD. They found only five studies that targeted social interactions for middle and high school students and that most studies used peer initiations and prompting and reinforcing strategies as their main forms of PMI. Using Reichow et al.'s (2008) quality standards, the authors found that three studies were strong, nine studies were adequate, and two studies were weak. Overall, the authors found that PMI was a promising intervention for all school-age students in inclusive settings and had generally positive results for generalization, maintenance, and social validity.

While Watkins et al. (2015) provided a detailed review for specific outcome variables in general education settings, there is still a need to evaluate PMI's effect on broad social skills in all school settings. Additionally, Watkins et. al.'s (2015) results highlighted two gaps within PMI research that need to be addressed: the effects of PMI for middle and high school age students and treatment fidelity procedures. Considering the increase in social demands of adolescents in schools and the social skills deficits common for students with ASD, it is imperative to understand how PMI can help middle and high school age students increase their social interactions or communication in schools to avoid social isolation (Sreckovic et al., 2017).

Treatment fidelity is also a critical component for PMI research because there are multiple tiers of agents within the practice (e.g., researcher who trains a facilitator who trains the peer). It is imperative to understand what active components are necessary for the success and feasibility of implementing PMIs for adolescents. Studies in Watkins et al.'s (2015) or Chan et al.'s (2009) reviews were lacking in regard to fidelity data on the peers' implementation of the intervention. It is essential to examine what the specific components of peer training are and how well they implemented what they learned in order to identify if peer behaviors are actually responsible for the change in the participants' social interaction or communication skills.

Lastly, no review has evaluated the effects of PMI on middle and high school students using the Council for Exceptional Children (CEC) quality indicators. Considering their ubiquitous use and guidance in classifying EBPs, it is imperative to evaluate PMIs according to rigorous research standards.

Purpose

The primary purpose of this review was to expand the findings of previous reviews (i.e., Chan et al., 2009; Watkins et al., 2015) with a focus on peer training components,

treatment fidelity, and quality of research according to CEC standards in order to identify if PMI is an EBP for middle and high school students' social skills. The current review included outcomes that measured any form of social interaction or social skills (e.g., engagement, interactions) with another typically-developing peer and limited the age group to only include studies that focus on secondary students (middle school through age 21). Additionally, the current review expanded their work by evaluating the quality of the included single-subject intervention studies using CEC standards. Considering the application of CEC standards in the peer-review process, only studies from 2014-2018 were included as the CEC standards were first published in 2014. This was done to evaluate if studies are meeting the standards since their publication.

This review examined the specific components of peer training and general descriptive variables: (a) social interaction targets, (b) components of intervention, (c) components of peer training, (d) effectiveness of interventions used in educational middle and high school settings, (e) primary outcomes, (f) participant and peer demographics, (g) generalization, and (h) social validity. Through this evaluation, the primary purpose of this review sought to determine if PMI is an EBP to meet the social interaction and communication needs of middle and high school students with ASD in school settings. Our research questions were as follows: 1) What is the methodological quality of the studies reviewed as measured by CEC quality indicators? 2) Does PMI aimed specifically at social communication skills for secondary students with ASD meet the CEC criteria for an evidence-based practice? 3) What are the specific training components implemented for peers? Is treatment fidelity data collected on peer behaviors? 4) What are the characteristics of

the PMI studies with regard to participant demographics, tiers of intervention agents, intervention components (i.e., direct instruction for focus student and setting), and outcomes, including generalization and social validity?

Method
Practice and Outcome Variable Definitions
The purpose of this review was to determine whether PMI met the criteria as an EBP according to CEC quality standards. We defined PMI as an intervention in which typically developing peers support or mentor similar-aged students with autism and act as the intervention agent; this includes peer training with or without the focus student present. Outcome measures in this review were broadly defined as any social interaction or communication (i.e., interactions, specific skills, engagement, and proximity) that was targeted in any school setting (e.g., general education and special education classrooms).

Inclusion Criteria
This review identified several criteria for inclusion. Studies were included if (a) PMI was the primary intervention; (b) peer training procedures were described; (c) social communication or interaction outcome measures were graphed to allow for visual analysis; (d) at least one participant had a diagnosis of ASD; (e) participants were either in middle or high school (i.e., 6-12 grade) or within the adolescent age range (i.e. 12-21 years old); (f) the study took place in a school setting where the students with ASD could naturally engage in social interactions with their typically-developing peers; (g) a single-case study design was used; (h) if the study was published between 2014-2018; (i) the study was published in a peer-reviewed journal; and (j) the study was published in English.

Articles were excluded that included PMI as part of a larger intervention package (e.g., social-emotional curriculum, social competence program) or if the study only used non-experimental designs (e.g., AB, ABA).

Search Procedures
To find relevant articles, the authors first conducted a search of electronic databases (i.e., ERIC, Education Research Complete, and PsycINFO) using the following search terms: *Autism, ASD, autism spectrum disorder, Asperger's syndrome, PDD-NOS, peer mediat* intervention, PMI, peer training, peer modeling, peer support, peer network, social skills, social communication, communication, interaction, social engagement,* and *conversation.* Abstract reviews were conducted for the initial results. Then, a full-text review of the articles from this search reviewed using the inclusion and exclusion criteria stated above.

An ancestral search was conducted of included articles and relevant reviews. Lastly, the authors searched the table of contents for the following journals: *Education and Training in Autism and Developmental Disabilities, Research in Autism Spectrum Disorders, Journal of Autism and Developmental Disorders, Journal of Positive Behavior Interventions*. Each member of the research team agreed for all articles included in this review.

Analysis Procedures
Five levels of analysis were used for this research synthesis. First, the authors evaluated the quality of the research studies using the CEC standards. The authors referred to the operationalized indicators as defined by the doctoral seminar course. However, for the purposes of this review, two indicators differed slightly. The indicators which focused on the role and training for the

intervention agent (i.e., indicators 3.1 and 3.2) were evaluated across all tiers of agents in the study. For example, if there was a facilitator who trained the peer to implement the intervention, these standards had to be met for both the facilitator and the peer. Additionally, the authors did not evaluate the indicator which focused on treatment fidelity for dosage, as it was deemed to be irrelevant to single-case research and that it would hinder the ability to draw any meaningful conclusions about EBPs using the quality indicators.

The next level of analysis evaluated descriptive variables of the study and were coded as follows:

- *Participant and peer demographics* included the age, gender, and diagnosis of each participant, whose data was eligible to be included in this review (e.g., if only one student in the study was diagnosed with ASD, then only that student's data was included for analysis); any peer demographics (i.e., age, gender) were included.
- *Targeted skill(s) and measurement* were categorized as *social interactions* (i.e., initiations, responses, questions, communication acts), *specific skill* (e.g., making choices in a communication book), *social engagement*, and *proximity.* The measurement system for the dependent variable was also coded.
- *Tiers of Intervention Agent* was defined as the total number of intervention agents needed to implement the PMI. For example, if a research assistant trained peers to implement the intervention, then there would be two tiers of agents. However, if a research assistant trained a facilitator, who then trained the peer, there would be three tiers of intervention agents.
- *Direct Instruction for Student with ASD* was coded dichotomously (i.e., yes or no)

as to whether or not the focus student was taught a communication or social interaction skills prior to the implementation of PMI.

- *Setting* was coded as the setting for peer and focus student training and the setting for data collection.
- *Social Validity* was coded dichotomously (i.e., yes or no) if anyone completed a social validity measure and coded the results as positive if each person rated the study in a positive manner; social validity results were rated as mixed if one person rated the study as negative or not meaningful.

- *Generalization* was coded by evaluating whether it was conducted and how the authors defined generalization by peer and setting (i.e., different peer, different setting, different condition).

After evaluating the descriptive variables of the review study, the authors identified which peer training components were present (see Table 1).

Results were evaluated to be either positive, mixed, no effect, or negative effect. A study was identified as having a positive effect if there were three replications of effect in the

Table 1
Peer Training Component Codes

Training Component	Definition
Rationale	peer was provided with rationale or purpose or benefits for the study/intervention/strategy
Direct Instruction	instructor/facilitator/researcher modeled the strategies/practice, provided opportunities for practice/discussion/questions
Expectations	expectations for intervention were discussed with peer or peer and focus student
Feedback	feedback was provided to peers throughout the intervention without the focus student present; adults prompting students during intervention or observation time did not count as feedback
Role playing	any instance where the peers were asked to role play situations using the strategies or practices taught
Guidance	when the peers are taught when to ask for assistance or seek out help and when peers are told about the role of the facilitator's or adult's role
Orientation	when the peers and focus student were trained together and included introductions, sharing of interests, creating a meeting schedule, discussion/suggestions of when social interactions could occur
Peer Support Plan	when a student-specific plan was developed by the researcher or the researcher and teacher and taught to the peer
Goal Setting	when goals of intervention were discussed with peers
Other	any component that was not earlier defined or was only present in one study (e.g., instruction on how to use iPod app)

intended direction of the social communication or interaction variable; the trends and levels were consistent across all phases including maintenance when applicable; immediacy of effect was present; consistent patterns of behavior were observed for each participant; no outliers or unexplained anomalies were in the data. The study was categorized as having a mixed effect if there were three replications of effect for the social communication or interaction variable with no effect or inconsistent data for one participant. A study had no effect if it lacked three demonstrations of effect, and it had negative results if it lacked three demonstrations of effect and the data demonstrates a trend opposite of the intended direction for the social interaction or communication variable.

Using the information gained from these analyses of quality indicators and results, the authors used the CEC standards to evaluate whether PMI in school settings could be an EBP for the social communication or interaction skills of adolescents with ASD. According to CEC, to be methodologically sound, a single-case study needs to meet all 22 quality indicators listed; but only 21 for this review. A practice can be considered evidence-based if there are five methodologically sound single-case studies with positive effects with at least 20 total participants across three different research teams.

Each article was coded using consensual agreement among all three authors. Any disagreements were discussed and analyzed as a group until a consensus was reached.

Results

Eleven studies with a total of 33 participants with ASD met the inclusion criteria for this systematic review. The results for each step of analysis are as follows.

Quality Indicators

Overall, all studies met at least 81% (17 out of 21) of the quality indicators with the exception of one study (Brock et al., 2016), which met 71% (15 out of 21) of the indicators. Three studies (i.e., Bambara, et al., 2018; Sreckovic et al. 2017; and Reilly et al., 2014) met 100% of the CEC quality indicators. Eighty-two percent of studies collected treatment fidelity and five studies collected treatment fidelity on peer implementation; 73% of the studies reported that fidelity was collected throughout the entire intervention. Only one study (Gardner et al., 2014) did not meet all (i.e., 100%) of the quality indicators for internal validity due to its inclusion of one non-experimental design (i.e., ABA). Sixty-four percent of the studies clearly defined their dependent variables, and 55% described the diagnosis criteria for the participants with ASD. Table 2 reports the findings for each CEC quality indicator for the studies reviewed.

Descriptive Variables

Descriptive variables for individual studies can be found in Table 3.

Participant and Peer Demographics. Collectively, the 11 studies included had a total of 33 students with ASD. Of those participants, only three of them were females. Their ages ranged from 12 to 20 years old. In eight studies (73%), participants with ASD had additional diagnoses including ID, ADHD, OCD, visual impairment and hearing loss.

For typically developing peers, ages ranged from 7 to 18 years old. All typically-developing peer partners were within 5 years of the age of the students with ASD. In the majority of studies (73%), detailed information regarding peer characteristics were provided.

Table 2

Quality Indicators for PMI Literature

Quality Indicator	Bambara et al. 2018	Bambara et al. 2016	Brock et al. 2015	Carter et al. 2017	Gardner et al. 2014	Hochman et al. 2015	Huber et al. 2018	Schaefer et al. 2018	Strasberger & Ferrari 2014	Sreckovic et al. 2017	Reilly et al. 2014
1.1. The study describes critical features of the context or setting relevant to the review.	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y
2.1. The study describes participant demographics relevant to the review	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
2.2. The study describes disability or risk status of the participants and method for determining status.	Y	Y	N	N	Y	Y	N	N	N	Y	Y
3.1. The study describes the role of the intervention agent and, as relevant to the review, background variables.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
3.2. The study describes any specific training required to implement the intervention and indicates that the interventionist has achieved them.	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y
4.1. The study describes detailed intervention procedures and intervention agents' actions or cites one or more accessible sources that provide this information.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
4.2. When relevant, the study describes materials or cites one or more accessible sources providing this information.	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y
5.1. The study assesses and reports implementation fidelity related to adherence using direct, reliable measures.	*Y*	Y	N	*Y*	Y	Y	*Y*	*Y*	N	*Y*	Y

5.2. The study assesses and reports implementation fidelity related to dosage or exposure using direct, reliable measures.	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N**
5.3. As appropriate, the study assesses and reports implementation fidelity either (a) regularly throughout implementation of the intervention and (b) for each interventionist, each setting, and each participant or other unit of analysis.	Y	**N**	**N**	Y	Y	Y	Y	Y	**N**	Y	Y
6.1 The researcher controls and systematically manipulates the independent variable.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
6.2. The study describes baseline conditions, such as the curriculum, instruction, and interventions.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
6.3. Control/comparison-condition or baseline-condition participants have no or extremely limited access to the treatment intervention	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
6.5. The design provides at least three demonstrations of experimental effects at three different times.	Y	Y	Y	Y	**N**	Y	Y	Y	Y	Y	Y
6.6. For single-subject research designs with a baseline phase, all baseline phases include at least three data points	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
6.7. The design controls for common threats to internal validity so plausible, alternative explanations for findings can be reasonable ruled out.	Y	Y	Y	Y	**N**	Y	Y	Y	Y	Y	Y
7.1. Outcomes are socially important	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

7.2 The study clearly defines and describes measurement of the dependent variables.	Y	Y	**N**	Y	**N**	**N**	Y	**N**	Y	Y	Y
7.3 The study reports the effects of the intervention on all measures of the outcome targeted	Y	Y	Y	**N**	Y	Y	Y	Y	Y	Y	Y
7.4 Frequency and timing of outcome measures are appropriate.	Y	Y	**N**	Y	**N**	Y	Y	Y	Y	Y	Y
7.5 The study provides evidence of adequate internal reliability, interobserver reliability, test-retest reliability, or parallel-form reliability, as relevant.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
8.2 The study provides a single-subject graph clearly representing outcome data across all study phases for each unit of analysis to enable determination of the effects of the practice	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Total Number of Indicators Met	21	20	15	19	17	19	19	19	18	21	21
Analyzing the effects (positive, no effect, mixed)	Positive	Positive	Mixed	Mixed	Mixed	Positive	No effect	Positive	Positive	Positive	Positive

*This indicator was deemed not relevant to the current review; ***bold and italicized***=fidelity measures were conducted for peer implementation

Table 3

Descriptive Variables

Articles	Participants	Peers	Targeted Skill and Measurement	Tiers of Agents	Setting	DI for FS	Adult present	Research Design	Social Validity	Generalization
Bambara et al. 2018	3 M, 1 F; ASD; 14-20 years old	4M, 12F 16-17 years old	Social interactions; Specific skills (follow up questions) Frequency	2 (instructor, peer)	I- Empty classroom O-Cafeteria	Yes	No	Non-concurrent multiple baseline design	Peers, FS, Teachers Positive	Different peers
Bambara et al. 2016	2M, 1 F; ASD*; 14-15 years old	2M, 6F 16-18 years old	Social Interactions; Specific skills (follow up questions); Frequency	2 (instructor, peer)	I- Empty classroom O-Cafeteria	Yes	No	Multiple baseline design	Peers, FS, Teachers Positive	Not collected
Brock et al. 2015	1M; ASD*; 13 years old	1M, 1F 11-12 years old	Social interactions; specific skill (making choices with communication book); Partial interval	4 (researcher teacher, para-professional, peer)	I- Empty classroom O-General education classroom	No	Yes	Multiple baseline design	Peers Positive	Not collected
Carter et al. 2017	4M; ASD*; 16-19 years old	9M, 4F (no ages reported)	Social interactions; Partial interval recording	3 (project staff, facilitator, peer)	I- Classroom O-Classroom	No	Yes	Non-concurrent multiple baseline design	Peers, FS, Teachers Mixed	Not collected
Gardner et al. 2014	2M; ASD*; 14-18 years old	4F, 2M 10th-12th graders	Social interactions social engagement; Partial interval recording	3 (researcher facilitator, peer)	I- Classroom O-Classroom	No	Yes	ABAB and ABA	FS, Parents, Facilitators, Peer Partners Mixed	Not collected

Hochman et al. 2015	4M; ASD*; 15-17 years old	9F, 2M 16-18 years old	Social interactions; social engagement; Partial interval recording	3 (researcher facilitator, peer)	I- Cafeteria O-Cafeteria	No	Yes	Multiple baseline design	FS, Parents, Facilitators, Peer Partners Mixed	Different condition (facilitator absent, no prompts given)
Huber et al. 2018	2M; ASD; 15 years old	1M, 2F 17 years old	Social interactions; Partial interval recording	3 (researcher paraprofessional, Peer)	I- Classroom O-Classroom	No	Yes	Multiple probe design	FS, Peers, Paraprofessionals, General Educators Positive	Not collected
Schaefer et al. 2018	3M; ASD*; 14 years old	1M, 1 F 13 years old	Social interactions; Partial interval recording	2 (researcher peer)	I- Classroom O-Classroom	No	Yes	Multiple probe design	Teachers, Paraprofessional, Peers Positive	Different settings
Strasberger & Ferrari (2014)	4M; ASD; 12 years old	1M, 4F 7-13 years old	Social interactions; specific skills (mands); Frequency	2 (researcher, peer)	I- SLP Room O-SLP Room	Yes	Yes	Multiple baseline design	Teachers Positive	Different settings
Sreckovic et al. 2017	3M; ASD*; 15 years old	14 students (no gender reported) 9th-11th graders	Social interactions; Partial interval recording	2 (researcher, peer)	I- Conference Room, Empty Classroom O-Conference Room, Empty Classroom	No	No	Multiple baseline design	Peers, FS, Parents, School Personnel Mixed	Different settings
Reilly et al. 2014	2M, 1F; ASD*; 16-18 years old	9F, 2M (no specific information provided about age or gender)	Social interactions; Partial interval recording and event recording	2 (researcher, peer)	I- Resource room, school library, courtyard O- General education academic classes and various locations during lunch	Yes	Yes	Multiple probe design	FS, Peers with similar disabilities, Peers, Parents Positive	Different settings and peers

*at least one of the students had another diagnosis; I- Intervention Setting; O- Observation Setting; FS- Focus student with disability; DI-Direct instruction

Targeted Skills and Measurement. For all of the studies, 28 total primary outcomes were measured. Nineteen (76%) of the outcomes measured social interactions (i.e., initiations, responses, communication acts). All 11 studies included a social interactions measure. Four studies (16%) measured specific skills including follow-up questions, mands, and making/expressing choice (Bambara et al., 2016; Bambara et al., 2018; Brock et al., 2016; Strasberger & Ferrari, 2014). Only two studies (8%) targeted social engagement in addition to their social interaction measures (Gardner et al., 2014; Hochman et al., 2015). Three studies measured proximity as a social skills outcome; however, no studies presented proximity measures in their graphs, so the authors were unable to conduct visual analysis for those variables. As a measurement system, partial recording alone (82%) was the most commonly used (eight studies); four studies included frequency only (Bambara et al., 2016; Bambara et al., 2018; Strasberger & Ferrari, 2014) and only one study included partial recording and frequency together as a measurement system (Reilly et al., 2014).

Tiers of Intervention Agents. Six of the 11 studies used two tiers of intervention agents (researchers directly trained peers to be interventionists for students with ASD), four studies used three tiers of intervention agents (researchers trained facilitators or teachers to train peers; Carter et al., 2017; Gardner et al., 2014; Hochman et al., 2015; Huber et al., 2018), and one study used four tiers of intervention agents (researchers trained teachers who then trained paraprofessionals to train peers; Brock et al., 2016). In eight studies (73%), an adult facilitator or researcher was present during the intervention to prompt the peer.

Setting. A variety of settings were used across studies to conduct intervention training sessions including the following: empty classroom or conference room (e.g., Bambara et al., 2018); speech-language pathology (SLP) room (Strasberger & Ferrari, 2014); cafeteria (Hochman et al., 2015); and regular classroom settings (e.g., Carter et al., 2017; Gardner et al., 2014). Only one study (Reilly et al., 2016) used a variety of settings to complete training sessions including resource room, courtyard, and school library. Similar to the training settings, PMI observations occurred in a variety of settings including the cafeteria (e.g., Bambara et al., 2016); regular classroom (e.g., Brock et al., 2015; Carter et al., 2017); SLP room (Strasberger & Ferrari, 2014). Only one study used a conference room/empty to complete PMI observations (Sreckovic et al., 2017). The majority of studies (64%) examined used the same settings for intervention training and observation of intervention effects.

Direct Instruction for Focus Students. Of the studies included in this review only four (36%) studies provided direct instruction for the participants with ASD (Bambara et al., 2016; Bambara et al., 2018; Reilly et al., 2014; Strasberger & Ferrari, 2014). The majority of the studies (64%) did not provide any direct instruction or training for the focus student.

Social Validity. All of the studies reviewed included some form of social validity data from at least one source (e.g., teacher) and reported social validity outcomes. Four studies included data from focus students with ASD, peers, and teachers/school personnel (Bambara et al., 2016; Bambara et al., 2018; Carter et al., 2017; Sreckovic et al., 2017). Only one study included only typical peers as a source of social validity data (Brock et al., 2016). One study included data

only from teachers (Strasberger & Ferrari, 2014). The focus students with ASD completed the social validity measure in the majority of the studies (73%; eight studies). Nine studies included more than three sources (e.g., focus student, peers, parents, paraprofessionals, peers with similar disabilities, facilitator) for social validity data. Seven out of 11 studies revealed positive social validity outcomes. Four studies had some responses that did not indicate positive results about the intervention and were coded as mixed (Carter et al., 2017; Gardner et al., 2014; Hochman et al., 2015; and Sreckovic et al., 2017).

Generalization. Out of 11 studies, six studies assessed generalization of social communication skills for students with ASD. Three of the studies defined generalization as a different setting with the same peers (Schaefer et al., 2018; Strasberger & Ferrari, 2014), one study defined it as use of communication skills with novel peers (Bambara et al., 2018), one study defined it as different settings with different peers (Reilly et al., 2014), and one study defined it as a trained adult not being present to prompt or facilitate discussion (Hochman et al., 2015). Most of these results indicated mixed findings; however, due to the inconsistencies with reporting and defining generalization, the authors consider generalization results to be inconclusive.

Peer Training Components
Table 4 summarizes the results of the researchers defined training components that are described in Table 1. Of the 11 included studies, the most commonly reported peer training components were rationale (73%), direct instruction (55%), and goal setting (55%). The greatest number of components addressed was from Schaefer et al. (2018) with six out of 11 (55%) of components. Only

one study trained peers to a criterion. No studies used only one training component.

Study Results
Table 2 includes the results from each study reviewed. Overall, seven out of 11 studies had positive effects on social communication for middle and high school students with ASD; three out of 11 studies had mixed effects; and one study had no effect (see Table 2). Of the studies with positive effects, seven dependent variables targeted social interactions (i.e., initiations, responses, conversation act); two dependent variables focused on specific skills (i.e., mands, expression of choice using communication book); and one variable focused on social engagement. When proximity was measured, it was not graphed, so visual analysis could not be conducted for this outcome measure.

Evidence-Based Practice
CEC standards state, "methodologically sound studies must meet all the quality indicators specified for the relevant research design" (CEC, 2014). Of the 11 single-subject studies, zero met 100% of all 22 quality indicators as proposed in the CEC standards. However, since treatment fidelity on dosage is very rarely reported within single-subject intervention studies outside of academics, the inclusion of this indicator was deemed unnecessary in assessing these studies' methodological quality and rigor. Without accounting for strict dosage fidelity, three studies met the CEC criterion as being "methodologically sound" and included 10 participants. Studies were considered methodologically sound as long as intervention dosage (number of intervention sessions) was either a) reported within the article or b) able to be determined through visual analysis of graphed data. Based on revised dosage criterion, PMI for middle and high school students with ASD qualifies

Table 4

Peer Training Components

Peer Training Components	Bambara et al. 2018	Bambara et al. 2016	Brock et al. 2015	Carter et al. 2017	Gardner et al. 2014	Hochman et al. 2015	Huber et al. 2018	Schaefer et al. 2018	Strasberger & Ferrari 2014	Sreckovic et al. 2017	Reilly et al. 2014
Rationale	X	X		X		X	X	X		X	X
Direct Instruction	X	X	X					X	X		X
Expectations				X							
Feedback	X	X	X					X			
Role Playing	X	X									X
Guidance				X		X	X	X			
Orientation					X			X		X	
Peer Support Plan				X		X	X				
Goal Setting			X		X	X	X	X		X	
Other									X	X	
Total Components	4	4	3	4	2	4	4	6	2	4	3
Peers are trained to criterion (Y/N)?	N	N	N	N	N	N	N	N	Y	N	N

potentially evidenced-based practice for social communication.

Discussion

The purpose of this review was to expand the findings of previous PMI reviews (i.e., Chan et al., 2009; Watkins et al., 2015) with a focus on peer training components, treatment fidelity, quality of research according to CEC standards, and classification as an EBP. Ultimately, this review found PMI targeting social communication and interactions for adolescents with ASD to be a potentially evidence-based practice. The current review found that more studies are meeting the majority of quality indicators for EBPs. These results are promising as it indicates that research teams are
conducting more rigorous and high-quality research.

The majority of studies reported positive results for social interactions (i.e., initiations, responses, communication/assertive acts) measures. At face value, one would assume that there is increasingly strong evidence that PMI is highly effective for social interaction outcomes. However, 64% of the studies operationally defined their dependent variables. For example, more than one article defined a communication act as one that "appears to have communicative intent" (i.e., Gardner et al., 2015; Hochman, et al., 2014). Definitions such as this are a potential threat to internal validity as they leave room for subjective interpretation.

Without clear dependent measures, it is inconclusive which variables are actually being influenced by PMI.

Additionally, a common rationale for communication interventions using PMI is the belief that it will contribute to building social relationships and increased quality of life for students with ASD. However, if a student learns to initiate conversation or respond to a peer, do those skills actually contribute to social connectedness and lasting friendships? There is still no evidence as to the long-term effects of PMI. Social validity conducted in these studies only addressed questions related to the intervention. No data were collected on long-term effects of these interventions; thus, it is not possible to conclude that PMI will result in meaningful relationships.

In Chan et al. (2009), the authors identified a significant gap in reports of treatment fidelity; overall, the trend was that interventions did not conduct (or at least did not report) this information. Unfortunately, only five studies conducted fidelity of peer implementation. Thus, it is unclear if the intervention was implemented as intended. If the researchers are not measuring peer behavior, they do not know if the peer as an intervention agent had any effect on the dependent variable, causing one to question whether the intervention is actually peer-mediation. Although this review determined that reporting dosage is not necessary for evaluating methodological quality of single-case research, it has serious implications for the practical application and efficacy of PMI by school professionals. Logistical planning is an integral component to any school-based intervention, and considerations must be made as to planning, implementation, and available resources.

When evaluating PMI as a practice that utilizes peers as the primary intervention agent, a consideration must be the components of peer training. Although this review identified various methods to train both peers and participants with ASD, it is still unknown which are the critical, active elements or peer characteristics that may impact effects. There is also a need to train peers to a criterion. Since treatment fidelity

for peer implementation is critical to PMI, it is necessary to know that the peers have an appropriate understanding of their role in the process.

While a defining feature of PMI is its use of peers as intervention agents, there are usually multiple people involved in its implementation. This review found that most studies used two or three tiers of intervention agents. During analysis, however, the results indicated the majority of studies reviewed had adults present during the intervention. This is concerning for two major reasons. First, one purpose of PMI is to reduce adult involvement and allow for more natural interactions between peers and students with ASD. If the adult facilitates the conversation, then the students with ASD are still heavily relying on adult support in social interactions. Secondly, a defining feature of PMI is that peers are the main intervention agent to the student with ASD. Therefore, if adults are present and are prompting the peer, it cannot be substantiated that the effect on social communication is truly the result of peer training and implementation of the intervention or if it is the result of adult presence and prompting. If it is the latter, then the practice cannot be considered PMI. Three studies (i.e., Bambara et al., 2018; Reilly et al., 2014; Sreckovic et al., 2017), however, did not have adults present to prompt, met 100% of the 21 CEC quality indicators, and had positive results. This indicates that PMI can produce positive results as intended, but further empirical support is needed.

This review found that most studies included generalization of some kind, which is promising to consider it is part of the rationale for using PMI. Although, there were many inconsistencies among the definitions of generalization, which affects the interpretability of generalization findings. Some studies defined generalization as occurring in the same setting with different peers, a different setting with the same peers, or different settings with different peers. Due to these inconsistencies, the authors deemed generalization results to be inconclusive. Generalization needs to be defined within the PMI universe.

It is important to note, however, that two studies which provided direct instruction to the focus student had the most clear and positive generalization results. Due to the peers not teaching any direct skills but instead supporting the participants' social interactions, it is possible that without direct skill instruction that there is nothing for the participant to generalize to a different setting, peer, or context. Therefore, direct instruction for the focus student that is then supported by peers during social interactions is a promising strategy for generalization.

Limitations
While the results of this review indicate that PMI is a promising practice, this process contained a number of limitations. Due to the focus of this review on peer training and fidelity, specific criteria related to focus student training and participant functioning levels were not examined. These variables will be important for future research considering that the direct instruction and student characteristics could have an impact on the possibility of generalization. The authors also chose to examine only published research, so there is publication bias, as there are possibly PMI studies conducted as dissertations that would provide different results. Additionally, there may be possible limitations using CEC quality indicators. However, the inclusion of a treatment fidelity indicator was necessary for this review. While this review only classified three studies as methodologically sound, there were five other studies that met at least 90% of the quality indicators. Finally, this review only examined studies conducted within a

short time frame (i.e., five years); thus, the findings are limited to a very small body of literature.

Future Directions for Research
To reduce adult presence during peer implementation of the intervention, the authors suggest researchers use feedback prior to PMI observations to help prompt peers to implement the strategies learned in training sessions. This review does not, however, recommend the removal of facilitators from the PMI process; instead, the feasibility and practicality of PMI relies on teachers and school staff being an integral part of the process. But to keep within the purpose of PMI, the authors advise researchers to not have adults present to intervene during the observation periods in order to get a true measure of peer effects on social communication. Tiers of intervention agents is an important concept to continue exploring. If these interventions are to be used in schools, there is a need to know more about how to train teachers to train peers, thus limiting the necessity of researchers.

Another area of growth within PMI literature is the definition for generalization. Findings from this review deem generalization results to be inconclusive and inconsistent, meaning that the authors cannot be sure that PMI actually promotes generalization for social skills outcomes; a more universal definition is needed. The current review examined peer components, but it is unlikely that peer training alone will be able to promote generalization without specific participant training. While not explicitly explored by this review, the NPDC classified five different types of PMI. However, researchers often use these terms interchangeably. To determine which types of PMI work best for which learners, which outcomes, and under what conditions, definitions need to be refined. Future research should attempt to measure

the long-term effects of PMI for students with ASD through social validity or other measures to see if there are any meaningful quality of life changes as a result of the practice. More research in middle and high school settings is needed for PMI targeting social interactions to be considered an EBP for this population.

Implications for Practice
Based on the findings from this review, peer-mediated intervention continues to be a well-supported intervention. However, practitioners need to take into consideration some key variables: training components, implementation fidelity for peers, and the comfort levels of the participants and peers. Training components that led to positive results included rationale, goal setting, direct instruction, and feedback. It is also imperative that teachers and school staff continuously monitor the peer's implementation of the training. Peers felt uncomfortable in the beginning of the intervention but were encouraged when they saw the student with ASD's progress. These results imply that providing continuous feedback to the peer as well as showing them the focus student's progress could be a meaningful addition to the practice and help relieve some of the initial discomfort for all parties. Continued research in PMI will provide more support for it as an EBP as well as guidance into how practitioners can meaningfully address social communication needs for students with ASD. Solidifying PMI as an EBP will help provide the best quality of life possible for students with ASD.

Conclusion
Overall, PMI targeting the social communication skills of middle and high school students with ASD is a potentially evidence-based practice. More research needs to be conducted in order to include operational definitions of social

communication and treatment fidelity for peer implementers. By addressing the limitations identified by the studies included in this review, PMI is likely to meet the CEC standards as an EBP.

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