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Transition Programs for Individuals with Disabilities: A Post-Secondary College Experience Leading to Greater Independence in Life and Work

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Abstract

This mixed-methods study analyzed data collected from a higher education pilot program intended to foster preparation for greater independence with students with intellectual disabilities (ID). Pearson's Quality of Life Inventory (QOLI) (Frisch, 1994) was administered to five program participants with high functioning intellectual disabilities (ages 18-25 years). Students also responded to interview questions relative to outcome objectives of domain courses including social skills training, fine arts exploration, recreation orientation, life and work skills instruction, and self-advocacy coaching. Data analysis of QOLI and themes from interviews revealed implications of how students perceive their overall quality of life. Also analyzed were the students' perceptions of the following areas of their lives: personal growth and self-esteem, work skills and behaviors, social skills for group activities and significant relationships, skills for functioning independently, and skills for self-advocacy and making choices. The goal of sharing these findings is to assist others in the design of future transition programs for this population.
Keywords: post-secondary, transition, intellectual disabilities

Transition Programs for Individuals with Disabilities: A Post-Secondary College Experience Leading to Greater Independence in Life and Work

Rural Virginia residents with high-functioning intellectual disabilities (ID) receiving Virginia's Applied Studies Diploma have limited functional training opportunities for independent living with adult employment outcomes. The National Longitudinal Transition Study-2 (NLTS2, Newman et al., 2011) of post-secondary institutions shares that only 28% of individuals with ID are enrolled in transition programs. In addition, 90% of adults with ID are not employed, as reported by former Office of Special Education and Rehabilitation Director, Madeline Will (2010). Young adults with high-functioning ID need life experiences with age-appropriate peers in typical settings to foster development of social skills needed for all adult relationships, whether work or personal. A holistic education with emphasis on having control of and making independent choices in life which nurture personal happiness and a sense of accomplishment is needed for this population. As noted, few transition programs are available to high-functioning individuals with ID as part of the offerings of institutions of higher education. Many of these students express a desire to go to college; an option offered to all other high school students upon successful program completion.

A growing number of college-based transition programs for individuals with ID are emerging since the Think College initiative and The Higher Education Opportunity Act (HEOA) (PL 110-

315) of 2008. These programs received initial funds given to institutions of higher education entitled Transition and Post-Secondary Programs for Students with Intellectual Disabilities (TPSID). The goal of these grants was to provide institutions financial support to begin restructuring post-secondary opportunities which can be ideally provided in a higher education setting alongside same-aged peers. These include employment, leisure, social skills, mobility and transportation, community living, and self-determination (Leach, Helms, Foster, Martin-Delaney, & Everington, 2013). Half of these programs are staffed as high school dual enrollment transition programs with neighboring colleges (Grigal & Dwyre, 2010). Models of these program range from inclusive course auditing to completely separate courses housed on campus with peer involvement in tutoring and teaching (Hart, Grigal, Sax, Martinez, & Will, 2006). Outcomes of such programs show progress toward increased employment, living with greater independence, and increased social engagement (Zafft, Hart, & Zimbrich, 2004).

Models of post-secondary transition programs offered through the 27 TPSID grants receiving funding for educational areas of functional academics, social skills, independent living, and employment skills were examined. Goals of such programs included providing a college experience, appropriate course work, and employment within the program which leads to sustained employment after program completion (Ryan, 2014). A program of this nature is critical in the rural communities of south-central Virginia where few employment opportunities exist, and no post-secondary college opportunities for individuals with intellectual disabilities in the region are available. This preliminary research of existing transition programs in VA led to this pilot program study in the spring semester of 2018 at Longwood University. The study consisted of four courses and a seminar offered during two full days each week for six students with intellectual disabilities. Components included adapted courses in areas of social skills, fine arts, lifetime activities, as well as the preparation for adulthood through independence in life and work. The purpose of the study was to investigate the impact of the college experience on students with ID on their perceptions of quality of life, as well as developing greater independence in life and work in adulthood.

Literature Review

Traditional Post-Secondary Outcomes

Individuals with intellectual disabilities (ID) have limited opportunities to gain appropriate vocational training in their home communities. These individuals have more challenges in securing meaningful and competitive employment with fewer options for living on their own than their peers. Attending college is not an option in most localities for this population (Wagner, Newman, Cameto, Garza, & Levine, 2005). Many students with ID express the desire to attend college with age-appropriate peers to continue their education for employment. Without a standard diploma from high school and demonstration of skills necessary for academic rigor in higher education, students with ID are ineligible for entrance into traditional degree programs. Post-secondary education (PSE) is evolving in some universities with some options for inclusion; yet, participation is rare for individuals with ID as compared to other disabilities (Thoma et al., 2011; Raue & Lewis, 2011). Emphasis in these programs is being placed on how to implement students into social groups, how to approach integration into academic classes, and how to deal with cost efficiency for a population that often cannot make enough money to afford high tuition rates or qualify for student loans independently. Though, as a result of the Higher

Education Opportunities Act (HEOA) of 2008 (P.L. 110-315), students with ID who participate in a post-secondary transition program approved as a United States Department of Education Comprehensive Transition and Post-Secondary Program (CTP) may qualify for federal financial aid (Kleinert et al., 2012).

Without needed postsecondary education or vocational training, employment outcomes are limited upon exiting high school even with high school-based programs intended to provide students with job skills. Programs specific to job training for students with ID in transition are under-represented across public institutions of higher education and other vocational training centers. Social inclusion is vital to maintaining a positive self-image and greater confidence to venture into community organizations and seek acceptance (Kostikj-Ivanovikj & Chickevska-Jovanova, 2016). Kleinert et al (2012) report attending college with age-appropriate peers is extremely valuable in that it offers individuals with ID exposure to a variety of educational experiences and exposure to different learning styles in the classroom. Outside of the classroom, inclusion in campus life is valuable for developing emotional maturity and life skills naturally acquired by typically developing peers embedded in college programs. Some exposure to post-secondary education (PSE) notably leads to greater employability with higher wages, greater independence and satisfaction in life and work, and greater likelihood of choosing a healthy lifestyle (Baum, Ma, & Payea, 2010; Grigal, Hart, & Migliore, 2011).

Independence in Life and Work

The ability to make choices independently from an array of opportunities for individuals with ID is dependent upon what is available for employment training and independent living in the individuals' home communities (Turnbull, 2014). Students in high school self-contained programs typically are still working on functional academic skills and need more instruction in work competency and independent living skills (Hartman, 2009). Students' wishes for adult career pathways and goals for independence, though included in their IEPs, may not be a part of the actual training program, leaving the student unprepared for options other than attending adult daycare programs (Certo & Luecking, 2011; Wehman, 2011). Many leave high school totally dependent on family members who discover there are no accessible options in home communities (McCollin & Obiakor, 2010). Many students in public high school special education programs take education for employment classes centered in self-contained classrooms that extend in school-based jobs, such as cleaning duties, making deliveries and performing routine tasks for office workers. Some may volunteer with children in the elementary schools. Few are placed in off campus jobs through these courses, especially in rural areas. With the lack of job internships included in high school transition programs for students seeking IEP diplomas, establishing independence in daily living skills becomes the focus of the transition curriculum. These usually lack applications applied in real-world experiences. Upon graduation the feasibility of living independently for many students is also dependent upon having stable employment.

Quality of Life Perceptions & Development of Transition Programs

Quality of Life is addressed in many dimensions and measured by individuals' reflections of positive life experiences and personal values (Schalock, Gardner, & Bradley, 2007). It incorporates making choices among options within dimensions as a part of self-determination training that is vital to the process of achieving quality of life (Brown & Brown, 2003). As a

social construct, quality of life is a discussion and driving motivation for programs that facilitate exploration of what makes a person happy in life. Providing equitable opportunities in life empowers people with ID and unleashes a sense of fulfillment. (Turnbull, Brown, & Turnbull, 2004). Of particular importance in this construct is to evaluate the immediate environment of the individual both within the social and cultural construct of the family. The community component in the quality of life process and participation in life skills training is to be open and diligent in discovering ways to support individual needs and being involved in evaluating what options are developmentally appropriate for each individual in life and work experiences. Parents, caregivers, and community members, including employers and job coaches, need to collaborate to find the balance between empowerment with scaffolding and overprotection to not inhibit continued growth in skills and natural development (Brown, 2012). Self-awareness of having control over personal choices promotes positive outcomes in life and work. Taking initiative to exercise choices with incentives and support offered in the environment significantly affect the individual's quality of life. High expectations and associated encouragement and support of the community and family members of individuals with disabilities leads to greater self-determination and productivity in adult living (Palmer, 2010).

When individuals demonstrate greater determination in making choices for life and work, they also perceive themselves as having a higher quality of life (Lachapelle et al, 2005)). Training individuals with ID in choice-making, self-advocacy, problem-solving, and self-determination skills can lead to positive outcomes when embedded into real-life applications on appropriate developmental learning levels (Vatland et al, 2014). Appropriate individualized life choice training can vary from specific job skills training and designing personal budgets to making clothing/meal choices and setting a daily activity schedule (Smith, 2014). Having a job that is fulfilling and meaningful to the individual can promote feelings of self-worth, security and confidence, increase independence and empowerment, and enable greater accessibility to life's opportunities with increased financial resources. Meeting people in the workplace under positive circumstances can foster relationships, socialization, and friendships. A focus on career stability can deepen a person's roots within a community and offer opportunities for making contributions to society (Zimmer-Gembeck & Mortimer, 2006).

Self Determination and Quality of Life

Fostering greater self-determination in individuals with ID correlates strongly with concurrent reports of higher quality of life from this population (12). Higher education and post-secondary training programs are essential for preparing students with disabilities for productivity and personal growth in adulthood. Of great importance is to link students, schools, and needed services to practical training experiences within home communities (Chapel & Somers, 2010). Coordination of vocational counselors, educators, job coaches, service providers, the individuals with disabilities and their families in a closely-knit network is key to the success of providing relevant employment experiences. Transportation, counseling, and portfolio development are secondary services that are vital to the sustenance of the network. Of particular concern to the vocational and life skills teachers are areas presenting barriers for putting students with disabilities in the work force. These barriers include students' deficits in socialization, having enough support to go with the students to scaffold work tasks with instruction on the job, and being able to find appropriate placements in internships that are aligned with the students' interests and personal goals (Lee & Carter, 2012).

Utilizing Strengths and Developing Problem-Solving Skills

Utilizing strengths and specific tailoring of vocational training to a student's unique needs, interests, and preferences holds great importance in ensuring the success in job preparation. For instance, understanding students' uniqueness and behavior patterns can promote success in delivery of job services, such as being attentive to details and accuracy in performing routines. If channeled correctly into specific job tasks, these qualities transfer into reliability, punctuality, consistency, and persistence in performing tasks on the job. Utilizing career interest assessments hand-in-hand with observation of work task behaviors customizes the job training program for each individual with a disability (Lee & Carter, 2012). Job skills training needs to focus on such skills as respectful behaviors, effective interaction in an interview, honesty and trustworthiness, as well as being able to solve daily problems related to time management, organizing supplies, and maintaining schedules including transportation (Hendricks, 2010). Ultimately, solving problems related to these daily work tasks and social connections required on the job are key to sustaining employment. Students themselves need to be actively involved in career options and focused on developing necessary skills to prepare for the workforce. They need to have access to programs facilitating greater self-awareness of career-related strengths and meaningful internships in order to develop and practice general work behaviors in both employment and social skills training.

Effective Interagency Collaboration for Person-Centered Transition Training

Person-centered transition transfers into quality outcomes for students with disabilities upon completion of high school, including entrance to post-secondary education, independent living, and employment, are coupled with the need to offer better preparation for adult living (Mazzotti, et al, 2016). Preparation includes programs that offer life and job skills training with internship placements in supported living and work environments. Such programs are scarce in rural communities and few existing ones address the changing needs of students, such as an emphasis on keeping pace with technology and career exploration with internship opportunities. Furthermore, existing programs cannot often lead to job opportunities due to the lack of support from interagency collaboration working toward this mutual goal. As an underserved population, students with ID are readily graduating without plans to enter post-secondary training programs, independent living facilities, and/or supported employment.

Better collaboration among service providers is needed to investigate needs of students and design programs to customize training for life and work (Riesen, Morgan, Schultz, and Kumpferman, 2014). Transition rehabilitation counselors need to work closely with educators and service providers to combine resources in programming to achieve mutual goals and improve outcomes (Test & Cook, 2012). Providing services in the home communities and incorporating greater flexibility in scheduling and sharing funding with agencies to meet fiscal requirements are among the strategies found effective within school districts reporting successful interagency collaborations for students with disabilities involved in transition programs (Noonan, 2008).

The focus of developing post-secondary education programs in colleges and universities needs to be on designing person-centered educational programs that utilize strengths and personal preferences of participating students with intellectual disabilities for preparing for adult life and

work. Courses focusing on students' developmental learning levels with scaffolds and supports in place to ensure successful learning of required course content and skills related to career placements is crucial. Of great importance is networking directly with private, state, and federal adult agencies to secure appropriate and person-centered support services for individuals transitioning to independent living and employment opportunities. Without post-secondary education in self-determination, many individuals with ID do not seek access to this information nor advocate for adult service options in education and training for work experiences through internships and supported employment (GAO, 2012). Stronger coordination among case managers in secondary and post-secondary placements will result in an effective continuum of transition planning utilization of federal programs and services available from the departments of Education, Labor, and Health and Human Services and the Social Security Administration (Folk et al., 2012).

Affordable Solutions to Post-Secondary Education for Individuals With ID

Participation in post-secondary education for individuals with intellectual disabilities leads to greater self-esteem and efficiency in life and work skills. A post-secondary program with adapted curriculum must focus on developing self-awareness, setting personal goals, and making positive choices for time investment, job training, and lifetime activities. Since many students with ID will not be able to make enough money in their future employment or work enough hours to pay back federal loans, adaptations need to be made to tuition rates with options to make the program affordable for the intended participants. To address areas of how to function in life and work through a customized program for each individual student will produce a higher quality of life with greater opportunities to be contributing adults in society (Thoma et al, 2011).

Methodology

Mixed Method Research

In this mixed method study, data collected from a college pilot program intended to foster personal growth and preparation for independent living was analyzed. Pearson's Quality of Life Inventory (Frisch, 1994) was administered to five program participants given at the completion of the program. The survey took approximately five minutes to complete. Students responded to interview questions relative to outcome objectives of domain courses. Domain course offerings included social skills training, fine arts exploration, lifetime recreation orientation, life and work skills instruction, and self-advocacy coaching.

Selection of Participants

Six students with high-functioning intellectual disabilities who are enrolled in high school transition programs and seeking an IEP/special education diploma or recent graduates from these programs (ages 18-25) participated in the ten-week transition pilot study, Longwood LIFE Transition Program, on the campus of Longwood University. Prior to the start date, all participants were mailed an adapted Longwood University consent form utilizing language that students with intellectual disabilities could comprehend easily. Parents of participants received the standard consent form approved by Longwood University with a request to sign both the student letter and an additional parent letter, as was requested by the IRB of Longwood University. All students were over 18 years of age and were their own legal guardians. Five students elected to take the survey and answer the interview questions for the study. One student

in the program elected not to participate in the survey or interview. The principal investigator accessed data sources without identifying factors collected from the study's five participants as a part of the program.

Procedures, Consent, & Setting

The principal investigator of the study had access to the inventory and interview data without identifying information to maintain confidentiality. A professor not connected to the pilot program arranged administration of the inventory and interviews. This professor coded the identities of the participants. Participants were informed of the voluntary and confidential nature of the research via instructions on the data collection instrument. Participants were also instructed not to put their name or any identifying information on the instrument. The IRB chair approved the study and exempted it from full review at Longwood University. The IRB at Gwynedd Mercy University also approved the study after receiving approval from Longwood University, the setting of the pilot research program and research study.

Instrumentation

Pearson's Quality of Life Inventory (QOLI) (Frisch, 1994) is a standardized measurement structured as an empirical measure of one's satisfaction in life and well-being based on the perception of the individual. Questions were asked about one's judgement of whether personal wants, needs, and goals have been fulfilled. The individual's level of satisfaction was determined by the level the individual feels these wants, needs, and goals are important in comparison with level of fulfillment. The survey asked the individual to describe how important areas of life are such as work and health and how satisfied the individual is with them. The individual was asked to indicate how the aspects of health, self-esteem, money, play, work, goal and values, love, helping others, and relationships within the home and community add to overall happiness by indicating "Not Important" (0), "Important" (1), or "Extremely Important" (2). The individual was also asked to indicate the level of satisfaction in how well his or her needs, wants, and goals are being met in that area of life by indicating one of six choices ranging from "Very Dissatisfied" (-3) to "Very Satisfied" (+3). Correlations were drawn between the individual's perceived level of importance placed on the aspiration for an indicating factor and level of satisfaction in the perceived achievement of the intended outcomes. When there were discrepancies between what is perceived as important and attained satisfaction, other affecting factors were investigated through asking the individuals to describe "Problems That Get In The Way Of Your Satisfaction." The interviewer used this information to further clarify students' understanding of the questions and to include as discussion points in data analysis.

The qualitative interview questions designed by the researcher investigated what the participants felt they have learned about their social skills, likes and dislikes in fine arts, and levels of independence as a result of being in pilot program courses. Questions about preferences for lifetime activities, importance of self-determination, and ability to self-advocate were included in the interview as well. The domain interview questions provided served to provide further details to support reasoning for the quantitative data provided by Pearson's QOLI and validation of the participants' perceived impact of the program on their overall quality of life and answers to the following pilot program study's research questions:

1. Will the Longwood LIFE transition pilot program student perceive an increased quality of life as a result in participation in the college pilot program?
2. What domain areas impact the personal growth of the transition pilot student?
3. What domain areas impact the preparation for independent living of the transition pilot program student?
4. What accomplishments have the transition pilot program students made as a result of participation in the college transition pilot program study?

Independent Variables, Dependent Variables, & Hypothesis

The independent variables, as measured by the Pearson's QOLI, were the aspects of life contributing to overall happiness and are included in the curriculum of the higher education transition pilot program called Longwood LIFE. These variables included money, self-esteem, health, goals-and-values, work, play, learning, creativity, helping, love, friends, children, relatives, home, and community. Other independent variables, as measured by the interview question and specific to the curriculum of domain classes, included appreciation for fine arts, social skills, independent living and vocational skills, preferences for lifetime activities, and self-determination and self-advocacy skills.

The dependent variables, as indicated on Pearson's QOLI, were the participants' perceptions of the level of importance of each independent variable to their lives as compared to their expressed self-awareness of their level of satisfaction with each aspect of their lives. Additional themes related to these aspects of life contributing to overall happiness were gathered from the interviews to draw stronger correlations to their levels of importance and satisfaction perceived by each participant. These responses revealed what specifically is important to each participant in the areas of social skills, in fine arts, and personal requirements for independence in daily living. In addition, the responses indicated job preferences, preferred lifetime activities for future enjoyment, and importance of being self-determined and a self-advocate to move forward in life. The researcher was confident the data would reflect support for the hypothesis that the Longwood LIFE pilot study program positively impacted the perceptions of the participants about their quality of life in these areas and provide key details specific to each person that could be used to further design the person-centered educational program for each individual participant. The researcher believed each participant would provide these details in the Quality of Life Inventory and personal interviews with clarity based on experiences, discussions, and exposure to opportunities provided in the Longwood LIFE pilot program.

Validity and Reliability

Pearson Clinical collected and provided data about life satisfaction in the QOLI in comparison with the Satisfaction With Life Scale to assess the convergent validity of the QOLI, which revealed statistical significant at .001. The Weighted Satisfaction range included the products of the Satisfaction ratings multiplied by the Levels of Importance ratings divided by the number of areas of life that were rated Important or Extremely Important. The Pearson Clinical QOLI used a test-retest reliability coefficient using 55 sample participants that generated a coefficient alpha of .79 for the Weighted Satisfaction rating. For our participant pool of 5 subjects, the coefficient alpha reliability was .58 (See Tables 1 and 2).

Table 1
Weighted Satisfaction
Reliability Statistics

Cronbach's Alpha	N of Items
.584	16

Table 2
Descriptions of QOLI Indicators in Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
W_Health	58.2000	122.700	.654	.499
W_Self_esteem	59.2000	191.700	-.701	.716
W_Goals	57.6000	104.300	.724	.441
W_Money	58.0000	144.500	.025	.607
W_Work	56.2000	135.200	.490	.540
W_Play	58.8000	160.200	-.715	.612
W_Learning	59.2000	113.200	.582	.484
W_Creativity	56.2000	139.700	.341	.557
W_Helping	57.2000	111.700	.725	.461
W_Love	57.4000	134.300	.174	.579
W_Friends	56.2000	135.200	.490	.540
W_Children	59.8000	191.700	-.579	.738
W_Relatives	57.8000	109.700	.894	.440
W_Home	57.8000	132.700	.596	.529
W_Neighborhood	57.4000	116.300	.940	.462
W_Community	57.0000	158.000	-.194	.630

The coefficient alpha would have been increased if either of two indicators had been deleted: weighted self-esteem or children. However, these items were not deleted because of their importance to the students' quality of life, as discussed in the curriculum of the domain courses. Students' self-esteem was a valued indicator for developing independence in life and work, self-expression, and self-determination in setting current and future goals.

Data Collection

During the last week of the pilot program, the five students were individually read the statements in the QOLI in a setting free of distraction by a graduate assistant in the Special Education Department who was knowledgeable about the Longwood LIFE program, the students' individual learning needs, and accommodations required by their individualized education programs for testing (read aloud). The response continuum was enlarged and separated in a clearer visual display in close proximity to assist each student in indicating their answers. Students were provided breaks as needed. Anonymity of the study participants was provided by the graduate assistant to the statistician who coded data responses of the test administration. The data was collected from the survey asking each participant's level of satisfaction with his/her domains of life such as his/her work and health. It asks how important these things are to your happiness. The survey asked the participant to describe the importance of certain parts of life and how satisfied the participant is with them. Answers include the following responses: not important-0, important-1, and extremely important-2, which was the portion of the test that was enlarged for greater visual acuity.

In a second setting on another day, the five students were individually interviewed by the same graduate assistant in a separate room. Each session was audio recorded to collect all details of explanations of question asked or follow up questions to responses and complete student answers. In the interviews, students were asked how they felt about their domain courses in the transition program and what they learned that will help them be independent as an adult. When the students needed clarification or explanation of what the question was asking, it was provided by the interviewer as recorded in the transcription. The interviews of each of the five students were transcribed and provided to the principal investigator. The professor not involved in the program pilot arranged for the coded responses with the graduate student before providing the transcriptions to the principal investigator.

A few days after the qualitative interviews, the students gathered with their portfolios, products, and other presentation materials to set up presentation areas and prepare to be interviewed on presentation night by their families, Longwood faculty, and community members. Students were interviewed individually again by other special education graduate students who had volunteered in the program using the same qualitative interview questions. In a "round robin" fashion, the Longwood LIFE students were asked questions by a revolving team while answers were recorded on paper by the graduate students. This documentation provided extensions to the students' interviews for the researcher in data analysis, which provided further clarification and validation of the students' perceptions of the program's impact on what they considered meaningful from their experiences.

Data Analysis

The data from the Quality of Life Inventories (QOLI) and the qualitative interviews was analyzed for the purpose of revealing if students in the Longwood LIFE pilot program indicated they felt more prepared to transition to greater independence, self-advocate in decisions related to career training opportunities and how they perceived the importance and satisfaction of their overall health, happiness, personal growth, independence, and relationships with others. Research of data collected from these sources was completed to reveal if students in the pilot

program have greater awareness of their transition to greater independence, self- advocate in decisions related to career training opportunities, and prioritize their overall health, happiness, personal growth, independence, and relationships with others with some level of importance or satisfaction. Within these constructs, the researcher deems valuable the rich collective details gathered from rich discussions with individual participants about their own specific preferences and goals that will provide guidance for the future person-centered curriculum for each participant in Longwood LIFE. A convergent mixed methods design was used to concurrently collect quantitative and qualitative data for the purpose of evaluating the data separately before merging the results (Creswell, 2015). The convergent model is designed to better explain and interpret the influence of the domain courses in the Longwood LIFE program on the students' perceptions of areas important to their quality of life and their satisfaction with their lives. Variable clusters relative to independence in life and work were analyzed using SPSS and included variable clusters included self-esteem, learning, work, helping, goals and values, money, and home. Social skills were clustered in relative variables including friends, relatives, love, children, neighborhood, and community. Lifetime activities variables included health and play. Aesthetic variables included creativity. IBM's SPSS (2015) was used to access and manage the data for statistical analysis and was run in collaboration with the researcher and statistician.

The qualitative data from interviews was collected on quality of life perceptions expressed by the pilot program participants. It was transcribed and analyzed to establish recurring themes that were coded with numbers of student responses. Students were asked, in addition, by another panel of student mentors the same questions a few days later in preparation for their final presentations at the end of the program to see if the students indicated the same responses or provided greater elaboration. The researcher used this documentation along with the transcriptions to identify codes from specific statements each student made about their experiences in Longwood LIFE related to perceptions of their quality of life. The researcher documented themes on a chart with coded student statements about the themes and how many times each statement or variation of the statement was listed. Two other professionals were given the opportunity to review the theme charts of qualitative data and agree or disagree with the theme choices chosen by the researcher. Themes and related supportive data counts were adjusted according to this discussion that followed the chart ratings. This interrater reliability of themes and codes provided for a review of data in collaboration with the principal investigator, who coded and prepared the qualitative data results.

Themes relative to domain clusters emerged in the student transcripts and were recorded with supportive evidence in the form of statements explaining the students' examples, feelings, and reasoning as to why they believed an area impacted them in a certain way or something they felt was relative and important to their experiences, learning, and future needs or goals. These individual themes were grouped together in clusters within the domain for further analysis. Both the individual themes and cluster groups were statistically analyzed in SPSS to establish significant differences in answers among areas of the domain and between participants.

The principal researcher wrote about how themes fostered personal growth along themes of developing greater independence as perceived and stated by participants in the transition pilot program in transcriptions. Details of specific statements from these transcriptions were aligned

with domain courses to support themes in the domain course areas. The researcher also entered the variables into SPSS under each domain and created values for each incidence of theme statements made by each student. Common domain variables were transformed into cluster variables for further analysis using the T-Test to establish any significant differences between participant's answers.

Social Domain Themes

The social domain themes related to the social skills course were taught by the speech therapy graduate students and emphasized group social skills needed for the college culture and community settings. Students had the opportunity to practice social skills with Longwood LIFE student volunteers, mentors, and faculty. *Expressive language* was a theme with supportive statements evidenced by "Speak clearly. Take your time when talking," and "Talk loud enough." *Statements and actions demonstrating appropriate nonverbal behavior* was a theme as evidenced by statements of "You can't hug your professors," "I used to hug people but now I ask them," "Give eye contact," "I learned that when talking with others to try to keep still, because if I keep myself still, my body won't be a distraction to what I am saying or to my focus for what I am trying to hear, so that I don't miss out on anything*." Reciprocal conversation and responses* was a theme focusing how to attend to conversational discourse as evidenced by statements such as "Wait until someone finishes to talk. Waiting to finish before having someone else talk, and "I listen well. I listen hard. I've got better about paying attention." The final theme that emerged was *taking initiative in social groups* where students referred to their self-awareness and responsibilities of participating in social groups. These supporting statements included "How to help classmates. If they need help, I can help my classmates make a project. Helping people who need help."

Skill domain themes were entered into SPSS (2015) for descriptive statistical analysis and for application of the T-Test. *Reciprocal conversation and responses* theme showed significant difference (p=.05, M=2.8). *Statements of actions demonstrating appropriate nonverbal behavior* theme was high tendency (p=.07) and also had the highest mean (M=10.2) in the social domain theme cluster. *Taking initiative in social groups* theme also had high tendency (p=09, M=1.6). The overall statistical analysis of the T-Test with the skill domain theme cluster showed significant difference (p=.01) demonstrating the variety of student answers reflecting personal growth and accomplishment in the social skills domain (See Tables 3 and 4).

Table 3

One-Sample Statistics of Social Domain Themes

Social Domain Themes	N	Mean	Std. Deviation	Std. Error Mean
SD_Expressive_Language	5	1.4000	1.94936	.87178
SD_Statements_Actions_Appropriate_Nonverbal_Behvior	5	10.2000	9.52365	4.25911
SD_Reciprocal_Conversation_Responses	5	2.8000	2.38747	1.06771
SD_Taking_Initiative_Social_Groups	5	1.6000	1.67332	.74833
Social_Domain_Themes	5	4.0000	2.34521	1.04881

Table 4

One-Sample T-Test of Social Domain Themes

	Test Value = 0					
					95% Confidence Interval of the Difference	
Social Domain Themes	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
SD_Expressive_Language	1.606	4	.184	1.40000	-1.0204	3.8204
SD_Statements_Actions_Appropriate_Nonverbal_Behvior	2.395	4	.075	10.20000	-1.6252	22.0252
SD_Reciprocal_Conversation_Responses	2.622	4	.059	2.80000	-.1644	5.7644
SD_Taking_Initiative_Social_Groups	2.138	4	.099	1.60000	-.4777	3.6777
Social_Domain_Themes	3.814	4	.019	4.00000	1.0880	6.9120

Independence in Life and Work Domain Themes

The independence in life and work domain themes were addressed in the Preparing for Adulthood: Independence in Life and Work course, with applications to other activities around campus such accessing the buffet-style dining hall, completing purchases in the student center, transitioning to multiple locations, utilizing the locker room for lifetime activities preparation, and exploring careers field trips. Students were asked to share which ways they had gained more independence and areas in which they still needed help. *General independence* emerged as a theme with multiple examples expressed by students such as "I can fix things by myself. I can do more things." "I've learned a lot about how to be independent about living arrangements." "I am independent getting dressed. I am learning how to blow dry my hair." "I can do sewing, email, and make pancakes." "I learned to cut my food in the dining hall." "In the Fitness Center, we folded towels." "It's important to listen in your job." "We went to the daycare center, and I want to learn how to take care of the children. I told the people there that." *Independence in sewing* theme included student statements, "I might need to know how to fix something by sewing. I can sew." "If I've already been set up with an assignment like sewing, once I've been talked to and have experienced the steps in and an explanation and I want to get started…I trust myself so I direct myself to following those steps and tell myself the things I need to do to help myself and hear things repeated from other people to stay on task to concentrate on things I'm doing," and "I can sew buttons." *Independence in functional math for daily living* theme included students statements, "If you have a budget, you can do what you need to do like shopping," "I learned how to count money," and "We did math when we was doing the calculator to see how much it costs." *Statements of career choices* theme focused on discussions about setting future career goals and included "I want to help kids as an aide in an elementary school, " "I want to explore other jobs and other places and learn more about those jobs," "I want to be a graphic designer," and "Would like to learn more about cooking jobs." *Needing help* theme emerged as students indicated areas they need help in daily living relative to their Longwood LIFE experience on campus or in daily living areas of personal care, future career goals, or situational decision-making. Student responses included "Need more help with math," "I might need help with getting places around campus based on my vision and knowing where I am and my surroundings," I still need help in the student center counting money and giving the right amount," and "Can I say read? I still need help with reading."

Independence in life and work domain themes were entered into SPSS (2015) for descriptive statistical analysis and for application of the T-Test. *General independence* theme revealed a high tendency and also had the highest mean (p=.009, M=8.2). *Needing help* theme had high tendency (p=.06). The independence in life and work cluster domain theme had the greatest significant difference (p=.004, M=4.2) demonstrating the individual variety of personal growth skill areas (See Tables 5 and 6).

Table 5

One-Sample Statistics of Independence in Life and Work Domain Themes

Independence in Life and Work Domain Themes	N	Mean	Std. Deviation	Std. Error Mean
ILWD_General_independence	5	8.2000	3.89872	1.74356
ILWD_Sewing	5	3.4000	3.64692	1.63095
ILWD_Functional_Math_Daily_Living	5	2.0000	2.82843	1.26491
ILWD_Statements_Career_Choices	5	3.0000	1.87083	.83666
ILWD_Needing_Help	5	4.4000	3.84708	1.72047
Indep_Life_Work_Domain_Themes	5	4.2000	1.54919	.69282

Table 6

One-Sample T-Test of Independence in Life and Work Domain Themes

	Test Value = 0					
					95% Confidence Interval of the Difference	
Independence in Life and Work Domain Themes	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
ILWD_General_independence	4.703	4	.009	8.20000	3.3591	13.0409
ILWD_Sewing	2.085	4	.105	3.40000	-1.1282	7.9282
ILWD_Functional_Math_Daily_Living	1.581	4	.189	2.00000	-1.5120	5.5120
ILWD_Statements_Career_Choices	3.586	4	.023	3.00000	.6771	5.3229
ILWD_Needing_Help	2.557	4	.063	4.40000	-.3768	9.1768
Indep_Life_Work_Domain_Themes	6.062	4	.004	4.20000	2.2764	6.1236

Aesthetic Domain Themes

The aesthetic domain themes related to the fine arts exploration course which entailed a variety of fine arts experiences on and off campus including art lessons at a local art studio in the downtown area close to Longwood University's campus. Students took art class on campus to learn photography and create postcards. They were in the theater building creating puppets and enjoying creative improvisations. They attended a musical with the theater department. They explored connections between feelings and different genres of music. One student asked an interviewer during the informal extension interview session, "What's your favorite music genre?" *Statements of expressions of feelings* theme involved students expressing personal feelings. Student comments included "I am happy for some fun things," "…because it makes you feel like you are happy to listen to different kinds of songs," and "Sometimes you have to express your feelings so they can help you, so we listen to them [songs], sing them, and express your feelings." *Artistic enjoyment and creativity* theme where students stated types of artistic experiences they enjoyed and related them to being creative included statements like, "Theater-how to use my imagination. More ability to create and show imagination," "Like art, drawing, tracing, and sketching," and "I like that we get to talk about our puppets." *Friendship in fine arts exploration* theme related to students' perceptions of relationships developed in fine arts settings as part of college experiences. Statements emerged such as "It hurts me a lot to say goodbye to my friends because my friends is a really big deal to me. I wanted to be in college longer," and "…be with your best friends," when discussing perceptions about the fine arts setting.

The aesthetic domain themes were entered into SPSS (2015) for descriptive statistical analysis and for application of the T-Test. *Artistic and enjoyment* theme revealed significant difference and the highest mean among the individual themes in this cluster (p=.001, M=13.0). The aesthetic domain cluster themes revealed significant difference as well (p=.001, M=5.2) indicating there was great variety in what the students perceived as important in their fine arts experiences and what they felt was meaningful to them. This personal growth was measured by the high mean responses in the *artistic enjoyment and creativity* theme (See Tables 7 and 8).

Table 7

One-Sample Statistics of Aesthetic Domain Themes

Aesthetic Domain Themes	N	Mean	Std. Deviation	Std. Error Mean
AD_Statements_Expressions_Feelings	5	1.4000	1.67332	.74833
AD_Artistic_Enjoyment_Creativity	5	13.0000	2.91548	1.30384
AD_Friendship_Fine_Arts_Exploration	5	1.2000	2.16795	.96954
Aesthetic_Domain_Themes	5	5.2000	1.38644	.62004

Table 8

One-Sample T-Test of Aesthetic Domain Themes

Aesthetic Domain Themes	Test Value = 0					
					95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
AD_Statements_Expressions_Feelings	1.871	4	.135	1.40000	-.6777	3.4777
AD_Artistic_Enjoyment_Creativity	9.971	4	.001	13.00000	9.3800	16.6200
AD_Friendship_Fine_Arts_Exploration	1.238	4	.284	1.20000	-1.4919	3.8919
Aesthetic_Domain_Themes	8.387	4	.001	5.20000	3.4785	6.9215

Lifetime Activity Themes

The lifetime activity domain themes related to the lifetime activities course in Longwood LIFE where the students participated in physical fitness activities and discussed the importance of health and well-being. They danced in the dance studio independently and with a dance instructor, lifted weights in the university fitness center with a personal trainer, swam in the pool with lifeguards, and played basketball and soccer with Longwood LIFE mentors. Themes that emerged in this domain included *statements selecting a future lifetime activity* and *explanations of why lifetime activity is important*. Student preferences for a future lifetime activity included all of the activities they experienced, including "weightlifting," "swimming," "swimming and basketball," "dancing," and "indoor soccer." *Explanations of why lifetime activity is important* theme statements included "Swimming because you get exercise and your heart," "Basketball, I just have fun with friends," "Swimming get exercise…important for heart," "I like moving," and "To stay healthy after school, I should weightlift."

The lifetime activity domain themes were entered into SPSS (2015) for descriptive statistical analysis and for application of the T-Test. The *statements selecting a future lifetime activity* theme revealed a significant difference and the highest mean (p=.010, M=11.2). The lifetime activity domain cluster theme revealed significant difference (p=.001, M-7.2) as evidence of the variety of answers students expressed about the impact of their lifetime activity experiences in the Longwood LIFE program (See Tables 9 and 10).

Table 9

One-Sample Statistics of Lifetime Activity Domain Themes

Lifetime Activity Domain Themes	N	Mean	Std. Deviation	Std. Error Mean
LAD_Statements_Selecting_Future_Lifetime_Activity	5	11.2000	5.44977	2.43721
LAD_Explanations_Importance_Lifetime_Activity	5	3.2000	3.56371	1.59374
Lifetime_Activities_Domain_Themes	5	7.2000	2.97069	1.32853

Table 10

One-Sample T-Test of Lifetime Activity Themes

Lifetime Activity Domain Themes	Test Value = 0					
					95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
LAD_Statements_Selecting_Future_Lifetime_Activity	4.595	4	.010	11.20000	4.4332	17.9668
LAD_Explanations_Importance_Lifetime_Activity	2.008	4	.115	3.20000	-1.2249	7.6249
Lifetime_Activities_Domain_Themes	5.420	4	.006	7.20000	3.5114	10.8886

Self-Determination and Self-Advocacy Domain

The self-determination and self-advocacy domain themes were based on the student seminar class that occurred every other week late in the day. Some students could not stay consistently due to appointments or sporting commitments in their home schools. There were a variety of instructors including graduate students from the counselor education program and Virginia Department of Education's "I'm Determined" program (disability advocacy organization) speakers. Parents met in a support seminar during this time, so staying was dependent on parents' ability to attend the parent seminar scheduled around the parents' work schedules. Themes that emerged from this domain related well to the activities of using one's voice to express desires and set boundaries with others. One theme was *statements about standing up for myself*, and was based on comments such as "I can stand up for myself. When someone is bullying you, you can say stop it," "One thing I learned about being a self-advocate is that I've learned that I can stand up for my beliefs, my thoughts, my opinions, my body, all the basic things about me and I can state if someone is bothering me or hurting me," and "Important-can do things in life no matter where you are…It is important to advocate for myself in the real world." Also, a student talked about reaching out for help as needed in saying, "Advocating for myself is important. I am confident in…If I need help, I can ask for it." *Statements about being independent and doing things by myself* theme revealed student statements indicating students had the ability to do things independently, such as "I can do things by myself more," "I can know how to help myself at home," Learned doing things by myself…can do anything I set my mind to," "(Being a self-advocate) helps me be a better Longwood student," and "Learn what you want to be."

The self-determination and self-advocacy domain themes were entered into SPSS (2015) for descriptive statistical analysis and for application of the T-Test. There were no themes revealing significant difference, but the cluster theme for this domain was close to high tendency (p=.10). The *statements about standing up for myself* theme had the highest mean (M=9.2) and generated the greatest number of student statements about standing up for oneself as an area of personal growth and positive impact (See Tables 11 and 12).

Table 11

One-Sample Statistics of Self-Determination and Self-Advocacy Domain Themes

Self-Determination and Self-Advocacy Domain Themes	N	Mean	Std. Deviation	Std. Error Mean
SDSAD_Statements_Standing_Up_For_Myself	5	9.2000	11.12205	4.97393
SDSAD_Statements_Being_Independent_Doing_Things_By_Myself	5	1.4000	1.51658	.67823
Self_Deter_Self_Advocacy_Domain_Themes	5	5.3000	5.55203	2.48294

Table 12

One-Sample T-Test of Self-Determination and Self-Advocacy Domain Themes

Self-Determination and Self-Advocacy Domain Themes	Test Value = 0					
					95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
SDSAD_Statements_Standing_Up_For_Myself	1.850	4	.138	9.20000	-4.6098	23.0098
SDSAD_Statements_Being_Independent_Doing_Things_By_Myself	2.064	4	.108	1.40000	-.4831	3.2831
Self_Deter_Self_Advocacy_Domain_Themes	2.135	4	.100	5.30000	-1.5938	12.1938

Discussion

Quantitative Analysis

Implications of Dependent Variables

The first research question, "Will the Longwood LIFE transition pilot program student perceive an increased quality of life as a result of participation in the college pilot program?" was addressed through the results of the five participants' ratings on Pearson's Quality of Life T-Score. Three students scored in the "High" quality of life range and two students scored in the "Average" quality of life range. Students with only an intellectual disability indicated a higher rating than those with an intellectual disability and autism or an intellectual disability and other health impairment. Three students live in a two-parent household and two live in a one-parent household but have supportive extended family as demonstrated by grandmothers participating with mothers in program orientation, attending special events with students, and providing transportation and resources needed for involvement in Longwood LIFE.

Other contributing factors to students' ratings are their disabilities and how they present challenges in their daily lives. Academic and communication skills contributed to students' abilities to access learning opportunities presented in domain classes. All but one student in the Longwood LIFE program could read independently on an upper elementary reading level. All students could write with support for generating ideas or following sentence structure modelling with peer tutors. Academic activities related to course content were adapted specifically for each student and with greater emphasis placed on experiential learning within a social environment, which ensured the success of the students. Socialization was supported with boundaries and guidelines in place for appropriate interactions. Many social opportunities were typically provided around campus throughout each day in classes, extra activities, and in the dining hall. Students with ID and autism tended to have more difficulty with social skills and making transitions in the college environment where students are required to transition to multiple settings daily on campus and where professors change each class period. Peer support can vary in number and familiarity for each of these class periods.

Transitioning to different sensory environments can be problematic. One of the Longwood LIFE students with ID and concomitant autism needed support in the transitions from different sensory environments and some breaks during the day depending on the intensity of the sensory factors and level of activity required. Another student did not need support with transitions but bonded better and was more interactive when prompted to become more fully engaged with others or when participating in preferred activities, such as soccer or photography.

Students with other health impairments can have conditions impacting the mobility and the endurance needed for multiple transitions as well as the ability to participate fully in all activities around campus independently. The Longwood LIFE students with Other Health Impairment (OHI) included mild cerebral palsy and seizure disorders manifested in short term memory loss. These students were successful with assistance provided in following routines and schedules, prompting in cumulative skills needed for course activities, and scaffolding for fine and gross motor activities.

These adaptations were typically provided and integrated into daily schedules in advance of the students' arrival to campus as well as updated for new activities and locations. It also required work beyond what had previously been required of some of our students, such as extra time provided for fine motor tasks like cutting food in the dining hall independently. "I learned to cut my food," was reported in student interviews. Providing adaptations as opposed to full inclusion without these adaptations in the curriculum presented to all students in the classes impacted the quality of life learning experiences.

All students accepted into the program indicated that going to college was a goal in life, and they believed getting an education would help them learn skills they needed to obtain a desired job and increase independence in life. The expression of these values indicated they already developed an understanding of wanting to be involved in, as well as deserving the higher education experience like their family members and peers. In the closing presentation interviews with the public, all students were able to express what they learned and what they wanted to learn. Some of these goals were additional goals from what they initially expressed they needed. This was the case with a student who said his goal was "to learn to read." Another student said he "needed" to take one of the animation classes at Longwood after spending time with a college professor in the amination program reviewing the student's drawings. After spending time in Longwood's Andy Taylor Child Care Center with the children and interviewing the center's director, two other students added the goal of taking a course geared at becoming an instructional aide.

After talking with sets of roommates who explained how they take care of their daily living needs, attend classes, and work, the students with ID said they wanted to live in an apartment like those they saw on campus. Students' exposure to program courses impacted their perceptions about what they needed to do to have the quality of life they desire as young adults. This included observing college students in their work study jobs and apartment living situations. Involvement in a transition program on a college campus provides this real-world opportunity as opposed to providing job simulations in training centers and on high school campus-based transition programs.

Implications of Quality of Life Inventory Weighted Variables

The sixteen quality of life weighted variables combined the importance placed on the indicator with the level of satisfaction expressed with that area of life to indicate "Low," "Average," or "High" ratings based on frequency percentages of study participants' overall feelings of importance and level of happiness in that area of life. The overall quality of life weighted indicators receiving the highest ratings ("High" ratings of over 50%) were goals-and-values (60%), work (80%), play (80%), creativity (80%), helping (60%), love (60%), friends (80%), and community (60%). This supports that the students' importance levels are closely correlated with their levels of satisfaction in these areas. For instance, students indicated they value working to support themselves and want to earn money in a job of their choice. In many cases, this work involves helping people they love, including their friends, and others in the community. They indicated life is to be enjoyed. They value their "play" activities with friends and enjoy hobbies they can do with friends. Their belief systems about what is meaningful in life and how to determine right from wrong seem closely related to their current life experiences and very relative to course discussions in Longwood LIFE. For instance, students said, "I can help my

classmates," "Learn about my community," and "Learn relationship skills." They readily expressed play activities they enjoyed and what made them happy in saying comments such as "Makes you feel happy to listen to different kinds of songs." Friendships were a component of enjoying aesthetic activities in saying "Be with your best friends." The quality of life weighted indicators receiving the highest "Average" ratings ("Average" ratings over 50%) were health (60%), home (80%), and neighborhood (60%). Student health ratings for importance and satisfaction were closely related indicating that the participants understood their health to be important and were actively working to eat healthily and exercise. They talked about eating healthy food choices and getting exercise in saying it is "Important for heart," and, "It's good for you," in student interviews on the topic about their lifetime activities course. In reference to their home environments, students indicated they wanted to remain in their homes or one day live on their own in an apartment. One student stated, "I've learned a lot about how to be independent with living arrangements." These discussions were centered in their preparing for adulthood course in Longwood LIFE as well as some exposure to money management where students indicated they had weaknesses in the student interviews with statements like "I need help with money."

Qualitative Analysis

Implications of Domain Theme Clusters

The second research question, "What domain areas impact the personal growth of the transition pilot student," was addressed in student interviews and revealed significance in the social skills, life and work, aesthetic, and lifetime activity domain areas, which were the four courses students participated in during the days in which they attended that emphasized setting goals in these areas for adulthood. Students were actively engaged with age-appropriate student volunteers and mentors within these learning environments in all required work activities with strong modeling and scaffolding provided as needed for individual students.

The social skills domain cluster showed significant difference (p=.01) for application of the T-Test and showed specific significance in the theme of *reciprocal conversation and responses* (p=.05). The theme of *statements and actions demonstrating appropriate nonverbal behavior* had the highest mean (M=10.2). The Longwood LIFE social skills course required students in participatory simulations to practice making conversations and exercising appropriate nonverbal behavior for the college culture and community settings. These variety of student answers relative to how students spoke with clarity, making eye contact, and demonstrating good manners in the dining hall and classroom environments reflect students' self-perceptions of personal growth and accomplishment in the social skills domain (See Appendix C).

The third research question, "What domain areas impact the preparation for independent living of the transition pilot program student?" was especially addressed in the Preparing for Adulthood: Independence in Life and Work domain course. This independence in life and work domain cluster showed significant difference (p=.004) for application of the T-Test, and the *general independence* theme had the highest mean (M=8.2). The Longwood LIFE independence in life and work course focused on becoming more independent with daily living skills such as accessing food in a buffet-style dining hall and sewing buttons and hems. Keeping up with belongings and following a changing schedule was emphasized. Talking about upcoming

decisions about career goals and interviewing students and professionals for jobs on and off campus meant determining the questions to ask on career exploration trips. Assessing one's own strengths and weaknesses was a discussion where students were encouraged in class to recognize when they needed help and should ask for it and when they needed to solve problems independently. The variety of student answers on the independence in life and work domain cluster supports students' self-perceptions about their growth in independence and promise to keep working at it with statements such as "It is important I can do things by myself. I am going to be doing things by myself."

The aesthetic domain theme cluster showed significant difference (p=.001) for application of the T-Test with the *artistic and enjoyment* theme having the highest significant difference (p=.001) and the highest mean (M=13.0). The Longwood LIFE fine arts exploration course included theater and art experiences ranging from puppetry to photography. Improvisation was especially effective in helping the students to express appropriate feelings for a variety of situations. Theater was a venue for building relationships among age-appropriate peers where Longwood theater students were regular class participants and often interacted with Longwood LIFE students in other campus locations. Students grew in their communication skills and in awareness of what they valued and enjoyed through their puppet's life story on stage at the closing presentation. Student interviews supported students' self-perceptions of personal growth in the aesthetic domain with high mean responses in the artistic enjoyment and creativity theme. Comments such as having "more ability to create and show imagination," and "I like that we got to talk about our puppets," explained how the puppetry presentation provided a pathway for students to share their goals and aspirations while engaging in natural conversation as a puppeteer with the interviewer.

The lifetime activity domain theme cluster showed significant difference (p=.001) for application of the T-Test, and the *statements selecting a future lifetime activity* theme showed significant difference (p=.01). The Longwood LIFE lifetime activities course emphasized health and wellness in areas of physical activity for enjoyment and building strength and endurance. Students expressed what they liked and did not like and expressed in interviews they had to overcome obstacles that were difficult as expressed in statements such as "Didn't like fitness class at first…will continue swimming…fitness center and will continue swimming." They expressed they understood the value of physical fitness for the "heart," "to stay healthy," and "to keep you strong."

The self-determination and self-advocacy theme cluster was close to high tendency (p=.10) with no significant differences in theme areas. The Longwood LIFE student seminar addressed mainly setting boundaries with others, voicing concerns, wants, and needs, and standing up to others. The seminar occurred five times and not everyone could stay to participate in the late afternoons when the seminar was offered. Still, the greatest number of mean responses supported student perceptions of growth in standing up for oneself as supported by student interview responses such as "I can stand up for myself." One student summed it up in saying, "Learn what you want to be," and "Can do anything I set my mind to."

Conclusions

The researcher hypothesized the Longwood LIFE pilot program would positively impact the perceptions of the participants regarding their quality of life through the course domain areas of social skills, independence in life and work, fine arts exploration, lifetime activities, and self-determination and self-advocacy. This was assessed through students' responses to quality of life indicators found in the Pearson's QOLI. Students state the level of importance and level of satisfaction in areas of life that typically contribute to personal happiness. Student interviews about their learning experiences in the domain courses of the Longwood LIFE program and students' perceptions of themselves in domain areas by the end of the program gave important key details specific to each person to further design the person-centered education program for each individual participant.

Quantitative and qualitative data offers support that the Longwood LIFE pilot study students expressed their perceptions about what contributes to their happiness in life, what they value, want, need, as well as their current levels of satisfaction in life. The fourth research question, "What accomplishments have the transition pilot program students made as a result of participation in the college transition pilot program study?", was addressed throughout student interviews. Students reported greater self-awareness of their accomplishments across domain course areas. Students shared what was important to them about their social skills. They shared the importance of speaking clearly, exercising good manners, listening and responding during conversational discourse and adhering to social personal space boundaries. One student voiced, "I used to hug people and they didn't want to hug, but now I ask them. It's important to remember to do that."

Students expressed ownership of what they were learning about being independent and taking initiative. The statements about their accomplishments included, "I learned how to work independently sometimes by myself. Learn relationship skills. Learn about the community. Helping people who need help." Students discussed learning about being more independent with living arrangements, getting dressed, blow drying hair, cutting food in the dining hall, sewing, emailing, making pancakes, folding clothes, cooking, and generally working hard at Longwood. Students indicated a greater self-awareness of what they could do independently and of areas in which they needed help. One example was when students bought snacks in the student center and asked for help with affirming the correct change. Students expressed what they knew how to do and what they needed to learn. They also expressed their likes and dislikes about the program. This included statements about feeling happy listening to music, painting, and building puppets. They were able to express lifetime activities that were valuable to them such as basketball, weight lifting, and swimming. Making friends was valuable as well as standing up for oneself when the situation presented. One student stated, "You can do things in life no matter where you are…It is important to advocate for myself in the real world." Discussions about doing things for oneself and being a self-advocate were prevalent in the Longwood LIFE pilot program, so student internalized these lessons and understood their relevance.

Recommendations for Program Development and Future Research

In the development of a two-year program, developing assessment checklists to chart individual progress in skill goal areas of each domain course is a necessity. Students indicated in pilot study interviews areas they perceived improvement in their skills. The Quality of Life Inventories indicated which indicators they perceived as important to their overall happiness in life and how satisfied they were in each area. Each domain course incorporated discussions and activities relative to these QOLI indicators. Each course set skill goals and reported progress in mid and final progress reports. Some of the skills showing levels of independence were evaluated in the ten-week program through checklists developed by program staff. These were included in students' portfolios along with pictures and anecdotal reports of activities, experiences, and products generated through domain courses of Longwood LIFE. An "independence in the dining hall" checklist charted how independently students made food selections, got their food and eating utensils, made healthy food choices, served themselves at food stations, were mindful of portion control, cut food themselves, and cleaned up after themselves. Levels of independence included students needing hand-over-hand assistance, levels of physical and verbal prompting, to no assistance required. Observations of both the Longwood LIFE and dining hall staff confirmed personal growth of all students in the dining hall within the ten-week session.

Developing pre- and post-assessment checklists specific to skill development within each domain course and for overall transitioning to greater levels of independence would be valuable to collect throughout the program in all domain course areas as well as in the exit student interview from the program. Further consideration needs to be given to the development of the skill assessment checklists to track the levels of independence broken into smaller steps leading to independent performance of the skill. It would be helpful for students, families, and employers to know whether students need hand-over-hand assistance, a visual support with pictures or words, verbal prompting, pointing and verbal prompting, or magnification for successful completion of each daily living skill or job task required for mastery aligned with students' goals.

Having each Longwood LIFE student have a personalized schedule including program offerings two days a week with other Longwood LIFE students on campus needs to be considered. Program participants could work in job placements with mentor support on campus job sites as a part of each student's vocational class. Modifications for job tasks and accommodations could be provided by trained student job coaches. Case management could be initiated through Longwood LIFE in collaboration with other public educational institutions and service providers. Lifetime activity needs to be expanded. Activities provided in collaboration with organizations in the local community based on student interests in aesthetic and lifetime activity domains of the pilot could be explored and considered for incorporation into the program. Students could take art classes at an art studio, swim classes at the YMCA, play basketball with Parks & Rec, and participate in a community theatrical production with scaffolding provided for individual students and peer support.

Longwood University is located in a rural Virginia region where school systems are servicing high numbers of students on free and reduced lunches and where businesses are closing. High

schools are struggling in this region to provide meaningful transition programs with internship opportunities and potentially would benefit from partnerships with other public institutions with shared resources for the benefit of mutual programming of educational goals. High school students with intellectual disabilities will continue their education at the post-secondary level where they can prepare for life and work in adulthood.

Longwood students majoring in education and special education need to expand their teaching and learning experience through practicums by teaching adult learners with disabilities and developing friendships as peers and mentors of age-appropriate peers with disabilities who they will encounter in their adult lives. Social work students' internships working as case managers for Longwood LIFE students to facilitate interagency partnerships with families that could continue beyond the Longwood LIFE certificate program show promise. Special education students serving as job coaches in the on- and off-campus internships is feasible. Internships need to be arranged in students' home communities where they are more likely to live and work after completion of the program.

Finally, using the QOLI as a pre-test upon entering the two-year program and as a post-test as a part of the exit process is valuable. Formal assessment data coupled with students' life and work goals, informal skill assessment checklists, portfolio of products and experiences, anecdotal progress reports, and exit interviews work to validate students' person-centered goals for life and work. Providing this information with the certificate of completion from the two-year Longwood LIFE transition program gives family members, case managers, and future employers a broader sense of how to support each graduating Longwood LIFE student in making future decisions about life and work aligned with individual student's perceptions of what he/she wants and needs for his/her quality of life. The final questions are always, "What do you want and need to be happy in life, and how do you want to participate and contribute to your community?"

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Use of Shaping to Overcome the Fear of Entering a Restroom: A Case Study of a Preschooler with Autism

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Abstract

Teaching toilet training skills to children with autism spectrum disorder (ASD) can be challenging. Many techniques use Azrin and Foxx's Rapid Toilet Training method (RTT). However, some children with ASD find the first RTT step of entering the bathroom or restroom to be challenging due to the relatively loud sound of the toilet flushing. Although more schools and public settings are utilizing the automatic flush toilets, effective strategies for overcoming the fear of the sound is limited to non-existent. The current study utilizes shaping to assist a preschool student with ASD overcome her fear of entering a restroom.

Keywords: Autism spectrum disorder, toileting skills, fear of toilet flushing sound

Use of Shaping to Overcome the Fear of Entering a Restroom: A Case Study of a Preschooler with Autism

According to the Autism and Developmental Disabilities Monitoring Network (ADDM), rates of autism spectrum disorder (ASD) have increased to 1 in 59 children (Baio et al., 2018; Xu et al., 2018). Children with ASD and their families experience many challenges, including toilet training (Francis, Mannion, & Leader, 2017; Cicero & Pfadt, 2002). According to researchers, individuals with ASD are likely to experience toileting problems longer than non-ASD individuals (Matson & LoVullo, 2009). Szyndler (1996) noted that 82% of children with ASD experienced toileting difficulties. Research suggests that when children are not successfully toilet trained, it becomes more difficult to train them as adults (Smith & Smith, 1977 cited in Francis et al., 2017). Dalrymple and Ruble (1992) noted that 39% of individuals with ASD continued to have problems with toileting into their teenage age and adulthood years (mean age of 19.5 years) as reported by their parents. Teaching effective toileting skills during early childhood is critical. Toileting refers to (1) the recognition of the need to go to the toilet and (2) the ability to independently complete the sequence of behaviors necessary to successfully eliminate in the toilet (Francis et al, 2017; Lott & Kroeger, 2004). When toileting skills are not learned, the quality of life and independence of individuals decrease (Kroeger & Sorensen-Burnworth, 2009). Moreover, Joinson et al. (2007) found that children who experienced toileting difficulties were more likely to be victims of verbal and physical bullying compared to children who did not experience toileting difficulties.

Literature Review

Toileting difficulties with individuals with developmental disabilities have been identified as an area in need of further exploration (Matson & LoVullo, 2009). In reviewing the literature on toileting problems, Francis et al. (2017) found that toileting problems were more often reported with individuals with limited language (48%), more often with preschoolers (53%), and more often with students in special education (50%).

Kroeger and Sorensen-Burnworth (2009) found that the majority of toilet training programs have been modeled after Azrin and Foxx's Rapid Toilet Training method (RTT, 1971) (Francis et al., 2017; Cocchoci et al., 2012). This method uses operant conditioning, such as positive reinforcement, graduated guidance, increased fluid intake to increase urination, scheduled times to visit the bathroom, and chaining procedures. The chaining procedures usually included: (1) walking to the toilet, (2) undressing, (3) sitting on, (4) eliminating, (5) redressing, and (6) flushing. When mastery of one skill set was achieved, the next behavior was paired. The RTT method has been found to be effective and has been modified by other researchers (Chung, 2007).

For some individuals with ASD, the fear of the relatively loud noise of the toilet flushing has prevented them from accomplishing the first step of the RTT chaining process: walking into the restroom. The organization, Autism Speaks, noted that "Some children with ASD are afraid of sitting on the toilet seats or hearing toilets flush" (Autism Speaks, 2012). In addition, there are several blogs that address the fear of using automatic public toilets written by parents and autism experts. However, there is no research on effective strategies to assist individuals to enter the restroom. Some researchers have recommended shaping for treating fears and phobias for individuals who have ASD (Flood & Luiselli, 2016). Shaping refers to using differential reinforcement to produce a series of gradually changing response classes (Cooper, Heron, & Heward, 2007). The current study uses shaping to assist a preschool student with ASD overcome her fear of a stimulus, in this case, the toilet.

Method

Participant

The participant was a 4 year, 10-month old female preschooler with autism ("Kasey"). She lived at home with her parents and two older siblings. Her language abilities were very limited, and was reported to say a couple of words, such as "baba" for bubbles. She maintained eye contact and communicated by pointing and nodding her head. Kasey was not toilet trained and wore a diaper to school. When asked to enter the restroom to have her diaper changed, Kasey regularly protested by moaning and dropping to the ground. During a meeting with her parents, they disclosed that Kasey was afraid of the loud noise of automatic toilets flushing. She would cry, scream, and drop to the floor when her parents guided her to public restrooms. Kasey was comfortable entering the bathroom in her house.

Setting

The setting was a preschool-based program for children with autism spectrum disorder (ASD). The program was five days a week from 8:30 AM to 1:00 PM. Eleven children were enrolled in the program with eight to nine instructional aides and one teacher each day. Data collection

occurred on Mondays when the researcher was on-site. Instructional aides (IA) carried out the procedures the rest of the week.

Procedures

In developing intervention procedures, the researchers (1) conducted informal observations of Kasey before, during, and after diaper changing using A-B-C recording, (2) administered the Functional Assessment Screening Tool (FAST) and Open-Ended Functional Assessment interview with staff, and (3) conducted a brief functional analysis (FA) procedure using four conditions of free play, attention, escape, and alone. A-B-C recording is a form of direct observation of a subject's natural environment where antecedent conditions and consequences of behaviors are continuously noted. The FAST and Open-Ended Functional Assessment interview with staff provide information on their observations of the behavior. The four conditions for the FA (free play, attention, escape, alone) were used to determine the trigger conditions for the target behavior. During the free play condition, preferred activities and attention were available with no demands for two minutes. During the attention condition, attention was withheld from the individual for two minutes unless the target behavior was exhibited. During the escape condition, task demands were given for two minutes ("It's time to change your diaper", "Come to the restroom", etc.) and prompts were ceased if target behavior was exhibited. Finally, during the alone condition, attention, demands and play materials were absent. In each condition, the observed target behavior was moaning, crying, or dropping to the floor. Data were collected using partial-interval recording with 10-second intervals during a two-minute period. If the target behavior of moaning, crying, or dropping to the floor occurred, the researcher recorded it.

Results

Based on observational data collected by the examiner, the following antecedents triggered Kasey's target behavior of crying and dropping to the ground: a) seeing the toilet icon prior to having her diaper changed, b) seeing the instructional aide wear gloves, c) seeing the IA hold the diaper, and d) hearing the words, "time to change" or "time to use the bathroom."
Based on staff's response to the FAST, Kasey scored highest in social reinforcement to escape and in social reinforcement to access specific activities, such as playing with a preferred toy. Based on the Open-Ended Functional Assessment Interview (completed by the teacher), the hypothesized function of the problem behavior is escape from the demand of changing her diaper and going into bathroom.

As noted, the Functional Analysis (FA) data were collected for two minutes each during four different sessions using four conditions (play, attention, alone, and task demand). Data showed that the target behavior of moaning and crying was most prominent when the task demand of having her diaper changed in the restroom was given, while being alone and playing produced the least number of target behavior incidences (refer to Figure 1 below).

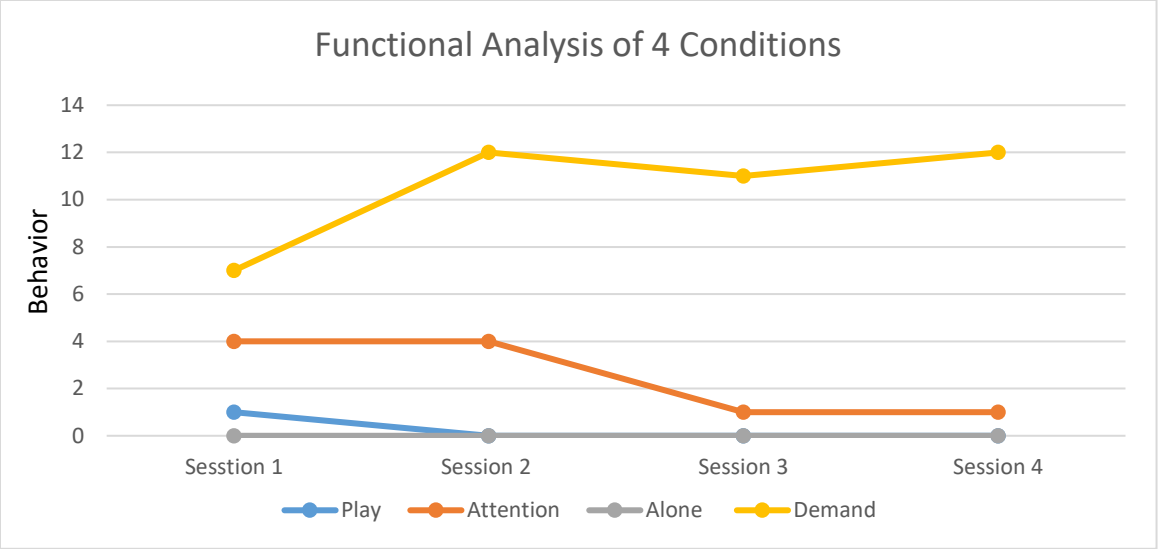

Figure 1. Frequency of target behaviors in four sessions under four conditions of play, attention, alone and demand.

Based on the direct and indirect observations, the following intervention strategies were applied to address Kasey's fear of the public toilet:

(1) Staff noted that Kasey enjoyed coloring with markers. Staff provided Kasey pictures of toilets and restroom signs to color during free play time to desensitize her to fear of toilets. Free pictures of toilets were downloaded from the internet and used as coloring sheets.

(2) Staff used a coloring icon (rather than a toilet icon), to request that Kasey color pictures prior to the diaper changing routine. The table used to color was situated in the room next to the restroom. This table was moved closer to the restroom during as the successive approximation strategies were implemented.

(3) Staff changed Kasey's diaper while she stood up and colored pictures of toilets and bathrooms in the conference room.

(4) Kasey was reinforced with verbal praise while staff changed her diaper. In the beginning, staff provided M & M's as she stood still and did not cry. If she began moaning and crying, the M & M's were withheld until she stopped.

(5) Using shaping, as Kasey became more comfortable coloring in the conference room, staff moved the coloring table closer to restroom. For instance, after Kasey was comfortable being changed in the conference room, the coloring table was moved closer to the door of the conference room. Then, the coloring table was moved to the hallway near the restroom. Finally, the coloring table was moved inside the restroom. Reinforcement consisted of verbal praise and M & M's as necessary. It should be noted that a sticky note was used to cover the automatic toilet sensor to prevent flushing.

(6) Data were collected on Mondays when the researcher was present in the preschool classroom. Staff were not expected to collect data during the week, but provided feedback on Kasey's progress.

Data (Figure 2) show that Kasey decreased the target behavior of moaning, crying and/or dropping to the ground after the intervention strategies were implemented after Session 4. In session 5, Kasey's diaper changing routine occurred in the conference room next to the restroom, and a coloring icon was used rather than the diaper icon. Kasey did not exhibit any problem behaviors while coloring in the conference room as her diaper was changed during sessions 5 and 6. Kasey exhibited a couple of incidences of moaning and crying when the criterion was changed into the hallway (Session 7) but the moaning was minor and occurred briefly. She did not drop to the floor. Staff gave her positive verbal reinforcement ("Good job standing" or "Good job coloring the picture") and candy when she stood still or colored. Before entering the restroom for sessions 7 and later, the toilet sensor was covered with a sticky note to prevent it from flushing. Moreover, the toilet was partially covered with an easel. Kasey did not fully see the toilet in sessions 7 and 8. By week 9, the easel was not covering the toilet and the student felt comfortable entering the bathroom. Kasey did not exhibit any of the target behaviors as her coloring table was moved inside the restroom. By session 9 when the toilet was fully exposed, Kasey moaned a couple of time, but it was minor. She resumed her coloring and playing with a preferred toy. By Session 10, Kasey did not exhibit problem behaviors in the restroom. From the observations and data, it appears the successive approximations with having the student perform a preferred activity (coloring) and covering the toilet sensor helped Kasey overcome her fear of the automatic toilet flushing.

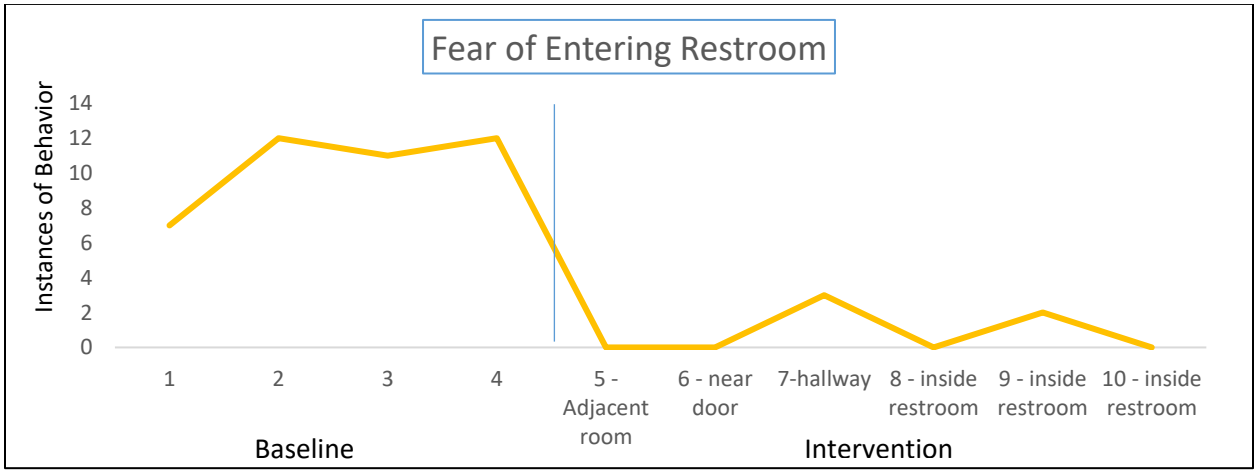

Figure 2. Incidences of target behavior during baseline and intervention sessions

Discussion

According to Cooper, Heron, and Heward (2007), applied behavior analysis is the science in which principles of the analysis of behavior are applied systematically to improve socially significant behaviors and experimentation is used to identify the variables responsible for behavior change (p. 20). Therefore, according to the definition, not only are the methods we use

to change behavior important, but it is equally important how we determine which behavior we wish to target for change.

According to Allyon and Azrin (1968), the relevance of behavior rule states a target behavior should be selected only when it can be determined that the behavior is likely to produce reinforcement in the person's natural environment (p. 56). Socially significant behaviors often meet this criterion. The Center for Autism and Related Disorders (CARD) considers socially significant behaviors to include academics, social skills, communication, and adaptive living skills. Adaptive living skills include gross and fine motor skills, personal self-care, eating and food preparation, toileting, domestic skills, time and punctuality, money and value, home and community orientation, and work skills (CARD, 2019).

In the current study, Kasey cried and dropped to the floor when staff requested to change her diaper in the restroom attached to the classroom. In addition, Kasey's parents noted that she was afraid of public restrooms and the noise of the automatic toilet flushing. Thus, not only was this adaptive skill deficit a problem behavior at school, as it interfered with time taken away from her learning, it was also a socially significant problem behavior, which affected the family's community access.

Behavior analysis that not only target important behaviors but change those behaviors to an extent that a person's life is changed in a meaningful way are said to have social validity (Cooper et al., 2007, pg. 69). In the current study, toileting is a socially significant and valid behavior for this student and her family. Additionally, while toileting is a socially significant behavior, it is also a pivotal behavior (Koegel & Frea, 1993; Koegel & Keogel, 1988; Koegel, Koegel & Schreibman, 1991). A pivotal behavior is a behavior that, once learned, produce corresponding modifications or covariations in other untrained behaviors.

Toilet training is considered a pivotal skill for young children to master. Toilet training based on positive reinforcement can be an enjoyable experience for children with autism. This milestone allows individuals to participate in community activities and decreases a number of negative consequences that may occur (i.e. diminished personal hygiene, stigmatism, and physical discomfort) (Cicero et. al, 2002).

The current case study utilized shaping to assist a preschool student with ASD overcome her fear of entering the restroom near her classroom. The interventions were simple and practical. The case study allowed the researchers to observe, collect data, and evaluate the effectiveness of simple interventions in a natural setting over time for one student.

There are limitations to the current study. First, as a single case study, the researchers are unable to generalize the effectiveness of the intervention. Having more students with the same fear participate in the study would have allowed for generalizability. Another limitation was that the study occurred during preschool hours Mondays through Fridays. The researchers were not aware of toileting behaviors that occurred outside of the school setting, such as at home, which may have affected the student's progress at school. Another limitation was that different instructional aides implemented interventions each week. Consistency of implementation procedures may have varied depending on the instructional aide. However, the simplicity and

practicality of the current intervention and its impact on the socially significant behavior outweighs these limitations.

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The Effects of CRA/CSA Explicit Instruction for Students with and without Disabilities Taught in an Inclusive Setting

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Abstract

Children with cognitive delays or developmental disabilities are at elevated risk of having a persistent mathematics disability. Students who have difficulty in mathematics display trouble with awareness of numbers and numeric concepts. This is alarming because students who display lower mathematics performance early on in school make smaller gains in mathematics throughout their school years. Researchers show that explicit instruction is effective in teaching students with disabilities mathematics. More research needs to be conducted on brief explicit mathematic interventions using the concrete-representational-abstract sequence which is also referred to as the concrete semi-concrete abstract sequence in mathematics literature that target the skill of counting for students with and without developmental disabilities taught in inclusive settings. In this study, researchers examine the effects of using explicit instruction coupled with the concrete-representational-abstract sequence to teach counting skills to students who received special education services for disabilities in an inclusive setting along with their peers not identified as receiving special education. Implications of these findings are also discussed.

Keywords: counting, explicit instruction, mathematics

The Effects of CRA/CSA Explicit Instruction for Students with and without Disabilities Taught in an Inclusive Setting

At least six percent of students in school struggle with a mathematics learning disability (Powell, Fuchs, & Fuchs, 2013; Shalev, Auerbach, & Manor, 2000). There are many more students who struggle with mathematics even though a formal diagnosis of a mathematics learning disability is not established (Powell et al., 2013). Children with cognitive delays or developmental disabilities are at elevated risk of having a persistent mathematics disability (Morgan, Farkas, Hillemeier, & Maczuga, 2016). Most students who have difficulty in mathematics have trouble with awareness of numbers and numeric concepts (Powell et al., 2013). Students who display lower mathematics performance early in their school experience make smaller gains in mathematics throughout their school years (Jordan, Kaplan, Locuniak, & Ramineni, 2007). Gersten and Chard (1999) liken the importance of students' awareness of numbers in mathematics to the importance of students' phonemic awareness abilities in reading. Skills that students struggle with are counting, cardinality, magnitude, fluency, and basic combinations of numbers (Mazzocco & Thompson, 2005; Powell, et. al., 2013). Each of these skills is tied to understanding numbers. Teachers who provide instruction in inclusive classrooms must address a wide variety of academic and functional needs. Instruction then must reach diverse groups of students and

include foundational skills that build meaningful and useful knowledge for each child. Kroesbergen, van't Noordende, and Kolkman (2014) explain the most important components of understanding numbers are counting and quantity knowledge. Therefore, students must have frequent experiences that give them time and opportunity in which they manipulate quantities, create mental images of those quantities, and organize quantities using the symbols of mathematics (Clements, 1999; Fusion, Clements, & Sarama, 2015).

Counting helps students create mental images of quantities and verbally assign symbols (e.g., five) to those quantities (Kroesbergen et al., 2014). Students need to count in a flexible manner so that they can develop a deep awareness of numeric representations and apprehend that numbers can be represented in many different ways (Clements & Sarama, 2015). Counting is the most basic and important skill of building an awareness of numbers (Kroesbergen et al., 2014). It is also the most common number activity in preschool (Ramani & Siegler, 2011). Activities that teach counting can be found in formal curriculum or informal classroom undertakings such as board games and can be student led instruction or more explicit and structured (Mononen, Koponen, & Mikko, 2014; Ramani & Siegler, 2011; Toll & Van Luit, 2014; Van De Rijt & Van Luit, 1998). This study examines the effects of explicit instruction that focuses on teaching children with developmental disabilities and their peers without disabilities in an inclusive setting to count in flexible ways.

Developmental Stages of Counting and Learning Trajectories

There are developmental stages for counting as well as learning trajectories for counting skills. Van De Rijt and Van Luit (1998) outline the developmental process for counting and Clements and Sarama (2010) delineate the counting trajectories that classify skills teachers observed to guide instruction. Both developmental stages and learning trajectories encompass Gelman and Gallistel's (1978) five fundamental principles of counting. The stages and learning trajectories are discussed within the context of the five principles of counting in the next paragraphs. Students demonstrate acoustic counting around the age of three. Acoustic counting is when students speak numbers but do not connect numbers with quantities (Van De Rijt & Van Luit, 1998). Clements and Sarama (2010) refer to students who demonstrate acoustic counting as chanters because they count through simple songs or rhymes. Even though students speak numbers when counting acoustically, they are not employing any of the five counting principles outlined by Gelman and Gallistel (1978).

After acoustic counting, students count asynchronously (Van De Rijt & Van Luit, 1998). Counting asynchronously is when students connect numbers to quantities of objects. Even though a connection is made between objects and numbers, students are not able to point to one object while enumerating one number. Students who count asynchronously are referred to by Clements and Sarama (2010) as reciters because they repeat number words, but can miss an object or point to the same object twice while counting. When students count asynchronously, they are still not employing any of the five counting principles outlined by Gelman and Gallistel.

The next stage is synchronous counting (Van De Rijt & Van Luit, 1998). Students who demonstrate synchronous counting are also referred to as corresponder counters by Clements and Sarama because students count and enumerate the number at the same time. Students count synchronously around the age of four or five. When counting synchronously students make a one

to one relation which is the application of the counting principle of one to one correspondence (Gelman & Gallistel, 1978). Even though students who count synchronously demonstrate one to one correspondence, they can still identify an incorrect amount as the total because they have not learned the counting principle of cardinality.

After synchronous counting, students demonstrate resultative counting which is also known as seriation (Van De Rijt & Van Luit, 1998). When resultative counting, students begin with the number one, every object is counted once, and students say the last number name when enumerating the number as the total number of objects. In resultative counting students demonstrate the principles of stable order and cardinality (Gelman & Gallistel, 1978). Therefore, students who count resultatively are called counters because they accurately count objects or pictures and can accurately answer how many (Clements & Sarama, 2010).

Students who understand that counting is relevant to circumstances in which a certain number must be created are referred to as producers (Clements & Sarama, 2010). This denotes the last stage of counting which is shortened counting (Van De Rijt & Van Luit, 1998). Shortened counting requires the application of the principle of irrelevance because students view numbers in a flexible way (Gelman & Gallistel, 1978). In order to see numbers in a flexible manner, students must recognize the representation of a number. Therefore when employing shortened counting, students count on from a representation of a number they see. For example, looking at a domino, the student would see two dots on one piece and three dots on another piece. Instead of having to touch each dot starting with one, the student would say two and continue to count the remaining dots on the other piece.

Counting Instruction

Promising research exists about effective curricula and building children's understanding of numbers. Toll and Van Luit (2014) investigate two kindergarten remedial programs to build number sense. Both programs have children work with numbers, and perform simple number operations. However, the second program was an accelerated version of the systematic comprehensive program. Students who were identified as at-risk for mathematics difficulties and received the remedial interventions made greater gains for both remedial programs investigated. Although the study addresses the need for intensive remedial numeracy instruction, more research should be conducted on interventions that specifically target counting skills and includes students with autism spectrum disorder or other developmental disabilities.

Mononen, Aunio, and Koponen (2014) examine the effects of early numeracy instruction for students in kindergarten with specific language impairments (SLI). The numeracy instruction incorporates guided instruction that encourages students to subtilize numbers and find groupings of numbers within larger quantities. For example seven can be taught as two and five, and students use manipulatives to see two and five make up the amount of seven. Findings indicate students with SLI improved their counting abilities to the level of their peers, performed similarly to their peers in addition and subtraction, but also showed weaker skills in arithmetic reasoning and in matching spoken and printed multi-digit numbers.

The *Additional Early Mathematics* (AEM) program (Van De Rijt & Van Luit, 1998) is another program shown to improve children's understanding of numbers. AEM includes guided or

structured instruction and teachers chose the materials and activities that fit with the abilities of the student. Guided instruction involves the teacher observing students solving problems and providing them feedback. Throughout instruction, the teacher makes suggestions and models solving problems. Results suggest children receiving AEM instruction made significant gains compared to the children receiving instruction in the control groups.

In a different study, Ramani and Siegler (2011) investigate the effects of playing an informal linear board game to build number line estimation, magnitude comparison, numerical identification and arithmetic learning for preschoolers from low socio-economic backgrounds (Ramani & Siegler, 2011). Findings show that the linear board game improved children's knowledge of numeral identification, and the ability to solve novel arithmetic problems. Results also indicate students with low socioeconomic backgrounds made more gains than students with upper socioeconomic backgrounds.

Explicit Instruction and CRA/CSA as a Counting Intervention

Explicit instruction is shown as an effective intervention in teaching students with disabilities mathematical concepts (Adams & Engelmann, 1996; Engelmann & Carnine, 1982; Miller, 2009; National Mathematics Advisory Panel, 2008; Peterson, Mercer, & O'Shea, 1988). Authors (2015) examine the effects of explicit instruction using the concrete-representational-abstract sequence (CRA). CRA is also referred to as a concrete semi-concrete abstract (CSA) sequence in research literature. CRA/CSA involves three phases. They are a concrete phase that includes objects that are manipulated to show the mathematical concept, a representation phase that includes pictures to show the mathematical concept, and an abstract phase that involves the symbols used in mathematics such as numbers and number names.

The study employed a multiple baseline design in which students with mathematic difficulties receive counting instruction using objects for the concrete phase of instruction, pictures of objects for the representational phase of instruction, and pictures of objects with an emphasis of verbal identification of the quantity for the abstract phase of instruction. Steps in the provision of explicit instruction include: a) provide an advance organizer, b) demonstrate and model the skill, c) provide guided practice, d) provide independent practice, and e) provide a post organizer. In implementation of the advance organizer, the teacher makes sure students have the prerequisite knowledge to learn the skill, tells students what they are going to learn and builds relevance for the students. In the modeling phase of instruction, the instructor demonstrates the new mathematical concept or how to perform a skill. During guided practice, the instructor and students together perform the skill. After guided practice students perform the skill without teacher assistance, which is the independent practice phase of instruction. Even though students demonstrate the concept on their own during independent practice, the teacher does provide students with feedback on their performance, and will give assistance if it is required. In the last step, which is the post organizer, students and the teacher reflect and review what they learned.

To summarize, effective instruction can improve counting skills and number knowledge for students with mathematical difficulties. Instruction can range from informal games in preschool to more structured instruction in kindergarten. To date, there needs to be more research that targets counting and includes brief supplemental counting instruction using the CRA/CSA sequence provided for children with developmental disabilities who have mathematical

difficulties and their peers. One way of providing mathematics intervention is through explicit instruction coupled with CRA/CSA. The purpose of this study is to examine the effects of CRA/CSA explicit instruction that focuses on improving counting skills for young children with developmental disabilities in an inclusive setting. The research question is to what extent are the effects of explicit instruction that is implemented using the CRA/CSA sequence on the shortened counting skills of students with and without developmental disabilities taught in an inclusive setting?

Method

Setting

This study was done in a three-week summer camp held in a large research university in the Southeast region of the United States. The purpose of the camp was to offer inclusive academic and social opportunities for children with and without disabilities. The camp included mathematic activity sessions, which incorporated instruction to build fluency in numerical operations. Mathematic activity sessions involved stations through which students rotated. Each station was approximately 15 minutes in length. Students played games at the stations to reinforce skills such as counting and operation knowledge with one station implementing the CRA/CSA counting instruction. The CRA/CSA instruction station was led by the researchers and certified teachers who were also graduate students.

Participants

Participants consisted of 24 boys and girls with and without a developmental disability. Thirteen students were identified as having a disability based on the local school district Individualized Educational Programs (IEP) provided by parents, and eleven students were reported to not receive special education services. Participants' ages ranged from age four through age eight. Five students were African American, two students were Asian, four students were Latino/a, and thirteen students were White. Data were also collected on students' completed grade level during the previous school year, mathematical ability, cognitive ability, and disability information based on students' IEPs (see Table 1).

Table 1
Demographic information of participants

Age	Grade Level	Mathematical Ability *a*	Cognitive Ability *b*	Disability Reported *c*
8.6	Kindergarten	<55	40	ASD
5.2	Pre-Kindergarten	90	109	None
5.4	Pre-Kindergarten	85	93	ID
7.9	Kindergarten	<55	58	ID
6.8	Kindergarten	71	77	DD
5.7	Pre-Kindergarten	95	100	SLD
8.0	First Grade	59	53	OHI
5.8	Pre-Kindergarten	104	99	None
6.2	Kindergarten	110	106	None
5.5	Pre-Kindergarten	64	82	OHI

5.6	Pre-Kindergarten	117	107	None
9.1	Second Grade	100	81	OHI
5.2	Pre-Kindergarten	99	88	None

(table continues)

a. Standard Score Test of Early Mathematics Ability (3rd Edition) (Ginsburg & Baroody, 2003).
b. Standard Score Kaufman Brief Intelligence Test (2nd Edition) (Kaufman & Kaufman, 2004).
c. Eligibility categories reported ASD is autism spectrum disorder, SLD is specific learning disability, ID is intellectual disability, SI is speech impairment, and OHI is other health impairment.

Table 1 (continued)
Demographic information of participants

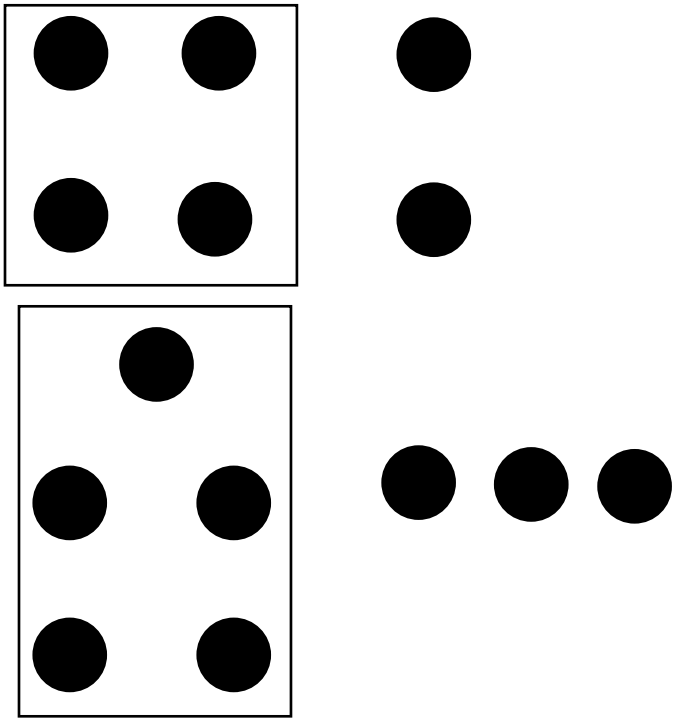
Age	Grade Level	Mathematical Ability *a*	Intellectual Functioning *b*	Disability Reported *c*
7.0	Kindergarten	<55	69	ID
6.5	Kindergarten	95	89	None
5.5	Pre-Kindergarten	109	97	None
6.3	Pre-Kindergarten	75	83	SI
5.3	Pre-Kindergarten	84	102	None
6.7	Kindergarten	70	71	ASD
6.5	Kindergarten	99	107	OHI
5.4	Kindergarten	117	104	None
6.3	Kindergarten	112	116	None
8.5	Kindergarten	<55	55	ID
7.2	Kindergarten	100	90	None

a. Standard Score Test of Early Mathematics Ability (3rd Edition) (Ginsburg & Baroody, 2003).
b. Standard Score Kaufman Brief Intelligence Test (2nd Edition) (Kaufman & Kaufman, 2004).
c. Eligibility categories reported ASD is autism spectrum disorder, SLD is specific learning disability, ID is intellectual disability, SI is speech impairment, and OHI is other health impairment.

Materials

Lesson materials included work mats, plates, counting objects such as bears and cubes, and lesson sheets that had drawings of circles students could count. Work mats consisted of construction paper or a blank sheet of paper the researchers and students placed objects on to count. The plates helped students organize the objects they were counting and see the numeric amounts. Lesson sheets included numeric pictorial representations of circles which ranged from numerical representations of one to ten. The first three lessons for each counting skill involved objects students counted using work mats and plates. Flash cards were used at the beginning of the lessons in which each card had a specific number of circles that represented a certain number. Students would count the amount of circles on the cards without touching.

Figure 1. Example of Counting Probes Sets



Procedures

There were a total of four mathematics stations in which one of the four stations included CRA/CSA counting instruction. Three stations involved activities such as reading a book and incorporating mathematics problem solving, identifying quantities using dominos, and identifying numbers using dice games. Students rotated to each station every 15 minutes. Each station was led by a certified teacher. Teachers who led the CRA/CSA counting station were trained during orientation. Researchers modeled each step of explicit instruction for each phase of instruction. After modeling teachers and researchers practiced each step of instruction together. Finally, teachers were required to independently implement the steps of explicit instruction for each phase of CRA/CSA until fidelity was at 100 percent.

The independent variable was the CRA/CSA instruction. CRA/CSA counting instruction comprised explicit instruction. Each phase of instruction consisted of an advanced organizer in which the teacher reviewed counting using one to one correspondence, and explained to students that they were going to learn flexible ways of counting. After the advanced organizer the teacher modeled counting on for each phase of instruction. Once the teacher modeled counting on, students were invited to count on with the teacher. Then after counting with teacher assistance, students were directed to count on independently. When students counted on independently the teacher provided feedback. In the concrete phase students counted using colored bears. In the representational phase students counted using flashcards with dots and tens frames. For the abstract phase students counted on quantities that were represented by worksheets. In the

abstract phase students were expected to state the number that symbolized the total quantity that was counted.

The dependent variable was students' performance on a curriculum based probe that measured shortened counting. The assessment consisted of dots outlined in a box and dots that were not outlined (see Figure 1). Students were directed to count the dots and state how many in all. They were told that they could say the amount inside the box and continue counting. Pre and posttests were administered to gather information on students' ability to count using shortened counting.

Procedural Integrity and Interrater Reliability

Procedural integrity data were collected throughout the study. The procedural checklist included the following: (a) administration of assessment prior to lesson implementation; (b) application of advanced organizer; (c) execution of modeling and demonstration of shortened counting using objects, drawings, or numbers only; (d) use of guided practice in shortened counting using objects, drawings, or numbers only; (e) inviting students to count independently with teacher feedback on student responses; and provision of a post organizer. A teacher completed the checklist during instructional lessons. The primary or second author observed lessons every day. A checklist was completed while observing instructional lessons at least once a week by the second author for a total of 25 percent of lessons for each instructional phase. The observers' checklists indicated 100 percent integrity. The two checklists (observer and teacher) with corresponding dates were compared to compute interobserver agreement. Interobserver agreement was calculated at 100 percent. All pre and posttest assessments were observed and checked for accuracy by the first and second authors. Interobserver agreement was computed by adding the agreements and dividing the number of agreements and disagreements. Interobserver agreement was calculated at 100 percent.

Results

A paired samples *t*- test was conducted to evaluate differences in pre and posttest measures of children's counting skills. The results indicated a significant difference in pre and posttest scores ($M = 5.64$, $SD = 3.50$, $t(23) = -8.06$, $p = 0.00$). Effect size was calculated using Cohen's *d*. Cohen's *d* was calculated as 1.6 which indicates a large effect size. The mean and standard deviation for pre and posttest measures are presented in Table 2.

Descriptive statistics were examined. There were statistically significant differences among mathematics achievement scores of students identified as having a developmental disability versus not identified as having a developmental disability. Students receiving special education services and identified as having a developmental disability scored significantly lower with an average standard score of 74 compared to their peers who were not identified as having a disability demonstrated an average standard score of 104.

Before receiving instruction on counting there were no significant differences in the participants' ability to count using shortened counting. This means that students whether identified as having a developmental disability or not only counted using resultative counting instead of the more flexible shortened counting. As a total group, all participants averaged one set counted correctly

before instruction began. After receiving instruction the average score for all participants was six sets counted correctly.

Table 2
Mean and standard deviation for pretest and posttest scores

Condition	*N*	Mean	*SD*
Pretest Students with Disabilities	13	0.36	1.35
Pretest Students without Disabilities	11	0.72	1.68
Pretest Total	25	0.52	0.30
Posttest Students with Disabilities	13	5.21	4.21
Posttest Students without Disabilities	11	6.27	4.36
Posttest Total	24	5.68	4.22

Discussion

The purpose of this study was to examine the effectiveness of explicit instruction using CRA/CSA in improving the counting skills for students with developmental disabilities in an inclusive setting. The findings of this study are congruent with previous research in that CRA/CSA and explicit instruction was an effective means to teach students who struggle with mathematical concepts mathematic skills (Miller, 2009; National Mathematics Advisory Panel, 2008). It is important for students to learn how to count in flexible ways because it builds awareness of numbers (Kroesbergen et al., 2014). The awareness of numbers is critical to a good foundation in mathematics and students' mathematical foundation has a lasting impact that is carried throughout their school years (Gersten & Chard, 1999; Jordan et al., 2007). One of the primary ways children build number knowledge is through counting and learning to count in a flexible manner (Clements, 1999; Kroesbergen et al., 2014). Therefore it is essential that students have the opportunity to learn how to count on and manipulate quantities of numbers in flexible ways. This study showed that explicit instruction using CRA/CSA for counting was an effective way to teach children with developmental disabilities in an inclusive setting in which peers without developmental disabilities also gained from the instructional experience. Even though there were significant differences among the groups of children with and without developmental disabilities, all children displayed difficulty in shortened counting which is considered the last stage in the development of counting skills (Van De Rijt & Van Luit, 1998). Teachers often provide instruction in which students' count using one to one correspondence and displaying cardinality. However, more instruction needs to be implemented in which children count quantities in different ways that build higher conceptual understandings in the magnitude and representation of numbers. This intervention provided an explicit way of moving students from basic counting using one to one correspondence to a more fluid manner of identifying quantities using shortened counting.

It is important that teachers help students learn to see numbers in a fluid way because it is required in developing more sophisticated understandings of mathematical concepts (National Council of Teachers of Mathematics, 2000). Perhaps if teachers can deepen students' numeric understandings then it is possible their performance in mathematical operations will improve as a result. Also if students begin their early years with higher counting abilities, then greater gains

can be made as they progress through school. Such counting skills are important for all students and explicit instruction is a way of building students' with developmental disabilities knowledge base in an inclusive setting in which they have access to instruction alongside their peers.

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Cultural Issues: Treating & Diagnosing ADHD

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Abstract

ADHD refers to a diagnostic category applied to children exhibiting inattention, impulsivity, and hyperactivity. Approximately 1.2 to 2 million children are currently diagnosed with ADHD, making ADHD is considered to be the most common child psychiatric diagnosis in the United States. Public schools are constantly faced with the over-representation of students from minority populations in special education. Children with ADHD may be protected by three federal statutes: Section 504 of the Rehabilitation Act of 1973 (Section 504), the Americans with Disabilities Act of 1990 (ADA), and the Individuals with Disabilities Education Act, Part B (IDEA). Given that minorities constitute approximately one-third of the public school population, the purpose of this paper is to obtain a better understanding of the role culture plays in the diagnosis and treatment of ADHD.

Cultural Issues on the Diagnosis and Treatment of ADHD

ADHD refers to a diagnostic category applied to children exhibiting inattention, impulsivity, and hyperactivity (Barkley, 1990; Cantwell, 1996). Cantwell (1996) explains that ADHD begins early in life, is persistent over time, pervasive across settings, and functionally impairs home, school or leisure activities. It has been estimated that ADHD occurs in approximately 3% to 5% of children in the United States (American Psychiatric Association, 2000; Berkley, 1998; Cantwell, 1996). According to Barkley (1990), the etiology of ADHD is unknown, yet its expression is believed to be the interaction of both psychosocial and biological factors (Barkley, 1990). Research suggests that the difficulties children endure as a consequence of this syndrome may affect their developmental trajectory and can result in impaired adult productivity and well-being (Manuzza et al. 1991; Manuzza et al. 1993). In order to effectively treat ADHD, the American Academy of Child and Adolescent Psychiatry recommends that not only a pharmacological treatment be used but a psychosocial treatment as well (AACAP, 1997). Individuals with ADHD oftentimes do not receive adequate pharmacological or psychosocial treatment. This is especially true for Hispanics and other persons belonging to an ethnic minority group (Jensen et al. 1999, Bussing et al. 1996). This is of special importance given that ADHD is considered to be the most common child psychiatric diagnosis in the United States (Bussing, 1998). According to Bloomingdale, Swanson, Barkley, and Satterfield (1991), approximately 1.2 to 2 million children are currently diagnosed with ADHD. Given that minorities constitute approximately one-third of the public school population, the purpose of this paper is to obtain a better understanding of the role culture plays in the diagnosis and treatment of ADHD (Reid, 1995).

International Differences in Diagnosing ADHD

It is important to keep in mind that ADHD is not diagnosed across countries in the same way, which can oftentimes explain the disparities when discussing the ADHD prevalence rates found in the research literature (Gingerich, Turnock, Litfin, & Rosen, 1998). For example, a study conducted by Mann et al. (1992) concluded that the perceptions of clinicians from several different countries with respect to hyperactivity varied significantly even when uniform rating criteria were applied. Furthermore, assessment instruments are not always used in the same way across countries, often using different cut-off scores for diagnosing hyperactivity (Holborow & Berry, 1986). According to Chandra (1993) cultural and societal tolerance for different behaviors vary, and how much a behavior deviates from the norm is based on culture-specific norms and not globally uniform criteria.

Reasons for the Inadequate Treatment of ADHD in Ethnic Minority Children

According to a study conducted by Bauermeister et al. (2003) in which he studied the treatment of ADHD among Puerto-Rican children, only one-fourth of the children who received the diagnosis received school-based services such as counseling and special education. Several explanations have been posited as to why ethnic minority children are currently receiving less adequate treatments than their white counterparts. One proposed explanation by Bussing (1998) is that ethnic minority parents had less knowledge of ADHD than their white counterparts even after controlling for socioeconomic status. Bussing (1998) believes that ethnic minority families often obtain medical advice from informal social networks and many times invalidate medical labels such as ADHD. The above may be due to these informal networks not recognizing the symptoms of the disorder or do not believe in the disorder. Therefore, parents who consult with these types of social networks are unlikely to view it as a disorder. A second explanation for the inadequate treatment of ethnic minority children is that different cultures have different thresholds for labeling behavior, different child-rearing practices, and also have different expectations for what constitutes appropriate behaviors (Weisz et al. 1991; Thiebaud, 1978).

Many times ethnic minority parents perceive ADHD symptoms as normal or as behaviors that will be outgrown, therefore not needing professional intervention (Bussing, 1998). A third explanation for this occurrence may lie in the trust parents place in their physicians. If parents do not trust their physician because they feel discriminated against, it is unlikely that parents will consider any pharmacological treatments that they prescribe (Bussing, 1998). Lastly, a fourth reason for the inadequate treatment of ADHD in ethnic minority children may lie in the fact their families many times have much more pressing concerns than their White counterparts, such as economic deprivation resulting from poorly paying jobs, low educational attainment, poor household structures, and a large number of dependents. Bussing (1998) believes that the main priority for many ethnic minority families is to prevent their children from incarceration, chemical dependency, and violence. Overall it appears that that the decision to treat ADHD is made within each family's cultural context and may explain the low number of children belonging to ethnic minority groups that receive adequate treatment.

Federal Statutes

Even though the decision to treat children with disabilities many times rests on the parents, who are often guided by the social network within their culture, the federal government enacted numerous laws to protect children with disabilities so that those children have a better opportunity to contribute to society. The Education for All Handicapped Children Act (PL 94-142) in 1974 and subsequent reauthorizations advanced education rights for all children with disabilities (Huefner, 2000). Parental input in their child's special education programming includes parental consent for initial evaluation (20 U.S.C. §1414 (a) (1) (C)), parental consent for placement (20 U.S.C. § 1414 (a) (5)), and parental involvement in the development of the child's Individualized Education Program (IEP) (34 C.F.R. § 300).

Evaluation procedures not only help determine if a child is eligible to receive special education services, but the Individuals with Disabilities Education Act of 1997 (IDEA) also stipulates that these procedures protect students from being misidentified based on race, culture, language difference, or the disability itself. Two ways of reducing the risk of misidentification are stipulated by the statute: (1) standardized tests must be administered by trained and knowledgeable personnel; and (2) standardized tests must be validated for the task for which they are used (20 U.S.C. § 1414(b) (3) (B)). In addition, tests must be used that are not racially or culturally discriminatory towards the child being evaluated (20 U.S.C. § 1414 (b) (3) (A) (ii)). Furthermore, students must be tested in their native language or mode of communication. Determination of a disability rather than differences due to language development should always be the focus of an assessment (34 C.F.R. § 300.532 (a) (2)).

To comply with federal mandates, the impact of culture and language on the assessments used to diagnose and treat ADHD has to be considered. By addressing these influences when evaluating children for potential ADHD, the over-representation of students in the special education system with cultural and linguistic diversity will be minimized.

APA Professional Standards in Working with Diverse Populations

The American Psychological Association (APA) has proposed several standards for psychologists that reflect and coincide with the aforementioned federal laws. The following suggestions were published by APA (1993) in an attempt to provide greater awareness to practicing professionals in regards to practical issues when working with culturally diverse clientele:

1. Psychologists educate their clients on the processes of psychological intervention, such as goals and expectations; the scope and, where appropriate, legal limits of confidentiality; and the psychologists' orientations.
2. Psychologists are cognizant of relevant research and practice issues as related to the population being served.
3. Psychologists recognize ethnicity and culture as significant parameters in understanding psychological processes.
4. Psychologists respect the roles of family members and community structures, hierarchies, values, and beliefs within the client's culture.

5. Psychologists respect clients' religious or spiritual beliefs and values, including attributions and taboos, since they affect worldview, psychosocial functioning, and expressions of distress.
6. Psychologists interact in the language requested by the client and, if this is not feasible, make an appropriate referral.
7. Psychologists consider the impact of adverse social, environmental, and political factors in assessing problems and designing interventions.
8. Psychologists attend to as well as work to eliminate biases, prejudices, and discriminatory practices.
9. Psychologists working with culturally diverse populations should document culturally and socio-politically relevant factors in the records (p.45).

The Influence of Culture in the Assessment of ADHD

Research suggests that four types of equivalents must be considered in order to establish the cross-cultural validity of an instrument. The first type of equivalents is called a linguistic equivalent and refers to having an accurate translation of behavioral descriptors. If this type of equivalence is not established, then behavioral raters may not have a common understanding of the characteristic being rated. In order to satisfy linguistic equivalence in an instrument, a back translation is recommended. To do this, a word is first translated into a second language and then retranslated back into the original language. If the retranslation does not yield the same word that the translation did, then the translation did not have an equivalent literal meaning (Marsella & Kameoka, 1989). A second characteristic of a cross-culturally validated instrument is that of conceptual equivalence, which refers to the similarities found in the meaning of the constructs used in assessment. Different cultures can interpret a construct in different ways. For example, the term "dependency" has a negative connotation in Western societies, yet it has a positive connotation in Japanese society (Marsella & Kameoka, 1989).

Moreover, a study conducted by Reid, Maa, and Vasa (1994) revealed that there are clear differences in the perceptions of ADHD across European, British, and American professionals. The third characteristic of a cross-culturally valid instrument is scale equivalence. In order to meet this criterion, there must be a common understanding of how the scale is used and that the raters share a common metric. In an attempt to quantify an opinion, behavior rating scales usually use Likert Scales and employ descriptors such as "Not at All," "Just a Little," "Pretty Much," and "Very Much" (Marsella & Kameoka, 1989). Different cultures may interpret the frequency, intensity, and duration of the behavior corresponding to each of the aforementioned descriptors differently, resulting in interrater differences within a culture (Ross & Ross, 1982). The last characteristic constituting a culturally valid instrument is that of normative equivalence, which implies that the standards developed for one culture, are appropriate for another (Marsella & Kameoka, 1989). According to Reid (1995), in order for instruments to be comparable across cultures distribution should be similar, population means should be equal, and the symptomatology of a disorder should take place at the same base rate and intensity across cultures. Behavior rating scales can be very useful in diagnosing ADHD. However, practitioners should be aware that the results obtained when using an instrument cross-culturally may be inappropriate. Maag and Reid (1994) suggest other ways of assessing a child such as multi-

method functional approaches like looking at behavior baselines, designing interventions to treat the behavior, reviewing the outcomes, and revising interventions if necessary.

ADHD within Special Education

Children with ADHD may be protected by three federal statutes: Section 504 of the Rehabilitation Act of 1973 (Section 504), the Americans with Disabilities Act of 1990 (ADA), and the Individuals with Disabilities Education Act, Part B (IDEA). Both State Education Agencies (SEAs) and Local Education Agencies (LEAs) are required to provide a Free and Appropriate Public Education (FAPE) to all eligible children with disabilities. A student with ADHD could be eligible to receive special education services as defined by Part B of the Individuals with Disabilities Education Act under the Other Health Impairment (OHI) category if the ADHD is adversely affecting the child's educational performance. A diagnosis of ADHD by a physician is not enough to make a child eligible for services; educational need must also be present.

According to Gregg (2000), states have ten responsibilities in implementing eligibility requirements for ADHD under IDEA. The first responsibility is to make sure that public schools are able to locate, identify, and evaluate children who are disabled by ADHD. The second responsibility is to ensure that children with ADHD are provided with a FAPE. The third responsibility is that school personnel must develop and implement an individual educational program (IEP) to meet that child's educational need. Positive behavioral interventions also may be developed to assist the child's learning. The fourth responsibility is that schools must make an effort to involve parents in all decisions regarding the evaluation, eligibility, placement, and programming for their children. The fifth responsibility is for schools to educate children with ADHD with nondisabled children in the regular education setting to the maximum extent appropriate. The sixth responsibility is that schools must provide parents with the procedural safeguards outlined by IDEA. The seventh responsibility is for schools to ensure that the personnel providing special education and related services to children with ADHD have met state qualification standards. The ninth responsibility that schools must enforce is that children with ADHD will participate in state and district wide assessment programs with appropriate accommodations. Finally, the tenth responsibility is for schools to monitor suspension and expulsion rates for children with ADHD as compared to children without disabilities.

In the 23rd annual report to Congress, there were a total of 253,795 United States children and 35,487 Texas children receiving services under the category of OHI. In comparison, there were a total of 291,474 United States children and 36,539 Texas children receiving services under the category of OHI in the 24th annual report to Congress. As one can note, there has been a significant increase in children being served. Although these numbers do not specify how many ADHD children are receiving services under OHI, we can estimate that a portion of students served under OHI is directly linked to ADHD. (U.S. Department of Education, 2001; US. Department of Education, 2002).

Disproportionate Representation of Minority Students in Special Education

Public schools are constantly faced with the over-representation of students from minority populations in special education (Daniels, 1998). According to Dunn (1968), the over-representation of students with cultural and linguistic diversity (CLD) in special education first came to light more than thirty years ago. Early research on this phenomenon by Li and Moore (1998) focused on demonstrating its detrimental impact on society, such as poor academic outcome and social stigma. Unfortunately, bringing this information to public attention was not enough to eliminate its pernicious occurrence. Nevertheless, the early research that was conducted yielded sufficient information to establish the educational inequities in key litigation cases. These cases would later pave the way for educational reform and legislation mandates.

Historically, children that have come from culturally and linguistically diverse backgrounds have been assessed in either a biased or discriminatory way (Diana v. State Board of Education, 1970; Larry P. v. Riles, 1979; Sattler, 1988). These types of biased assessments have led to the disproportionate pattern of diagnosis and placement in special education of Hispanics, African-Americans, and Asians. In a study conducted by Langsdorf et. al. (1979), they noted that Mexican American and African American children from low SES backgrounds are less likely to have adopted the middle-class values and attitudes that are characteristic of childhood socialization patterns in American education and are consequently more at risk of being referred for special education. Bahr and Douglas (1991) state that for the past two decades there have been an overwhelming amount of minority students overrepresented in special education. Lipman (1997) indicates that the overrepresentation of culturally diverse students in special education is particularly visible in racially integrated schools. Furthermore, Shinn, Tindal, and Spira (1987) found that teachers referred a higher percentage of black than white students in grades 4-6 and concluded that race is a factor that affects teacher referral decisions. Moreover, a study by Zucker and Prieto (1977) found that when a student was described as being Hispanic, teachers found placement in special education as being more appropriate.

Currently, there is growing concern for the disproportionate number of minority students being served under special education. Studies have shown that ADHD appears to be more prevalent among children from low socioeconomic status (SES) as well as children who are ethnically diverse (LeFever & Dawson, 1999). Linguistic diversity also influences teacher referrals. Arcia, Frank, Sanchez-LaCay, and Fernandez (2000) state that the identification of children with ADHD becomes problematic in cases where English is the student's second language. These researchers further mention that characteristics of the behavior must be distinguished from inattentiveness or disruptiveness which may be the result of the child not understanding the language of instruction. Therefore, English Language Learners may be at particular risk for being inaccurately referred to special education for suspected ADHD. Even though professionals in the field are becoming more aware and sensitive to these issues, the instruments currently used to assess ADHD continue to lack the cross-cultural validity necessary to make accurate diagnoses (Reid, 1995). This has serious implication for children of minority status given that they may not receive the services and supports necessary to be successful in the classroom, and consequently in society.

Summary and Future Direction

As previously mentioned, it is evident that there are many limitations ranging from conceptual to psychometric to ethical in the assessment practices of ethnically and linguistically diverse populations. Again, given that ADHD is considered to be the most common child psychiatric diagnosis in the United States, and that minorities constitute one-third of the public school population, assessment instruments should, therefore, be up to par to meet the needs of these children. Both parents and educators should be informed about the behaviors associated with the different minority cultures so that they do not confuse these behaviors, like most uninformed observers do, as hyperactivity or inattentiveness, which could then lead to an ADHD referral or diagnosis. Presently, IDEA 97, Section 504, and ADA have set laws and procedures to protect students from being misidentified based on race, culture, language difference, or the disability itself.

Also, professional organizations such as APA have proposed several standards for psychologists that also reflect and coincide in the intent of the aforementioned federal laws.
Unfortunately, even though the law intends to protect children, the assessment instruments that we have to work with sometimes do not have the psychometric properties necessary to conduct valid cross-cultural assessments. Given the present limitations in the field, a multi-method functional approach should be implemented more frequently. It could be postulated that the disproportionate number of minority students being served under special education could have been subject to these injustices. As practitioners in the field of school psychology, we must take the lead in resolving some of these issues that have affected minority students for such a long period. This change must begin with becoming better educated about the minority cultures that practitioners encounter every day. Practitioners must also become aware of the present psychometric limitations of current ADHD instruments since they pertain predominantly to Western cultures and therefore do not represent children globally since their demographic characteristics are many times inadequately represented in the normative sample. Future research in this area should focus on developing new instruments that take the minority context into account such as race, language, traditions, and values. If the disproportionate number of ethnically diverse children in special education is to change for the better, these issues must be addressed and immediate action should be taken.

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The Impact of Social Communication on Employment Success for Adolescents with Autism Spectrum Disorders

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Abstract

This study evaluated the effectiveness of a social communication intervention for improving the social skills and employability of four adolescents with Autism Spectrum Disorders (ASD). A multiple baseline across participants design was used to investigate the effectiveness of social communication skill development on equitable exchange in social conversations in a school training setting and an employment setting. Components from the *Social Thinking* curriculum that taught social communication through development of verbal interactions using supportive comments, follow-up questions, and bridging comments were combined with peer modeling and self-evaluation to provide the components of the intervention. The findings indicated that growth occurred for three of the four participants in their use of the aforementioned social communication skills in the school training setting; further growth generalized for two of the four participants to the employment setting.

Keywords: Autism Spectrum Disorders, Employment, Social Communication Skills

The Impact of Social Communication on Employment Success for Adolescents with Autism Spectrum Disorders

Dynamic, unpredictable social situations present considerable challenges for adolescents and young adults with Autism Spectrum Disorders (ASD). Individuals with ASD share similar social and communication characteristics ranging from mild to severe that negatively impact an individual's ability to engage in natural social discourse (Carter, Davis, Klin, & Volkmar, 2005; Colle, Baron-Cohen, Wheelwright, & Van Der Ley, 2008; Ledford, King, Harbin, & Zimmerman, 2018). Individuals with ASD tend to have greater difficulties sustaining conversations and adjusting to the social context of an interaction than their same-age peers (CDC, 2013). Additionally, individuals with ASD may present a self-indulgent focus on restrictive, repetitive interests as well as challenges with perspective taking and empathy towards others (Bennett et al, 2008; Rao, Beidel, & Murray, 2008; Seltzer, et al., 2003). These difficulties tend to become more prominent in adolescence as social interactions increase in complexity and require quicker, mutual exchanges to achieve communication success (DeRosier, Swick, Davis, McMillen, & Matthews, 2011; Pugliese et al., 2015; White, Koenig, & Scahill, 2007).

For youth with ASD, the array of unpredictable social situations extends into adult environments with new challenges of increased unstructured social experiences in settings such as employment (Barnhill, 2007; Hendricks, 2010; Howlin, Alcock, & Burkin 2005; Wehman, et. al. 2012). The stress associated with transition-related changes, coupled with socialization difficulties, often lead to multiple, short-term and unsuccessful employment experiences (Barnhill, 2007; Jennes-Coussens, Magill-Evans, & Konig, 2006; Muller, Schuler, Burton, & Yates, 2003). In fact, Shattuck and colleagues (2012) stated that in comparison to young adults with other disability categories, youth with ASD had the poorest employment participation rates post-high school. The employment rates for people with ASD in the NLTS 2 data have been reported to be as low as 31% (Newman, Wagner, et al., 2011). These poor outcomes for adults with ASD often also result in significantly lower wages and hours per week than their peers (Cimera & Cowan, 2009). Ganz (2007) reported that the consolidated lifetime cost of unemployment among adults with ASD was more than $970,000. Thereby leading to a negative impact on society as well as the individual due to lost employment wages and increased consumption of governmental services and benefits (Howlin, Alcock, & Burkin, 2005).

Although the poor employment outcomes indicate the need for workplace interventions for individuals with ASD, limited employment research has been conducted. A recent longitudinal study emerged indicating the successful efforts of Project SEARCH at improving the employment outcomes for young adults with ASD (Wehman et al, 2012). Project SEARCH provided community-based instruction in an employment site focused on developing social communication skills. Throughout the internship, the participants' challenging behavioral incidents decreased and their abilities to perform the job tasks with accuracy increased. Additionally, a study from the United Kingdom focused on providing a supported employment program for adult employees with ASD. The study developed (a) socialization between the employee and coworkers, (b) appropriate communication with supervisors and coworkers, and (c) ongoing problem solving skills through employment coaching in over 70% of the participants with ASD (Howlin, Alcock, & Burkin, 2005). The participants also reported high levels of job satisfaction and moderate salary increases.

As previously discussed, the development of social skills can significantly impact the employment experiences of students with ASD. Social skill interventions have been utilized with this population to assist them in improving their long-term outcomes. The Program for the Education and Enrichment of Relational Skills (PEERS) has been studied as an intervention focused on developing and maintaining friendships for adolescents with ASD with promising results (Mandelberg et. al, 2014). Further interventions have focused on improving social cognition processes with the goal of decreasing social withdrawal of youth with ASD (Stichter, et al. 2010), and others have studied 3D immersive environment systems to help young people with ASD learn and understand social skills (Boccanfuso et al., 2015; Cheng, Huang, & Yang, 2015). Interestingly, many social skill interventions for people with ASD and other disabilities such as anxiety and schizophrenia focus on utilizing cognitive-behavioral therapy to improve specific social skill deficits (Boettcher, Hasselrot, Sund, Andersson, & Carlbring, 2014; Granholm, Holden, & Link, 2014; Othman, Ramlee, Ghazalan, Wei, & Shahidi, 2015; White, et. al., 2010.) The focus for the current study was to investigate using social communication skill development as a means to improve acceptable social interactions in employment settings for

youth with ASD. *Social Thinking* (Winner, 2007), was chosen as a promising resource to use in this study because it combines the evidence in the field from cognitive-behavioral therapy interventions and teaching social communication skills into a useful and viable curriculum.

Social Thinking teaches social communication skills through perspective taking, reciprocal conversation skill development, and problem solving. *Social Thinking* is widely used by autism practitioners across various age groups. Within the past 10 years, early evidence has emerged validating the effectiveness of this program (Winner & Crooke, 2014). Specifically, Lee and colleagues (2015) found that students displayed significant increases in skills when *Social Thinking* was used as an intervention; and Crooke, Hendrix, and Rachman (2008) found that social communication strategies from the *Social Thinking* curriculum significantly improved the use of expected social behaviors of children and adolescents with ASD in informal and casual conversations.

The purpose of this study was to gather data on the effectiveness of using social communication strategies derived from *Social Thinking* to improve the conversations of young adults with ASD in both the school, training setting and the employment setting. The following research questions were addressed:

(1) Will intervention components derived from the *Social Thinking* curriculum increase the social communication skills for participants with ASD in a school setting?
(2) Will the supportive comments skill generalize to an employment setting?

Method

This study utilized a multiple baseline design across participants to determine the effectiveness of the intervention on equitable exchanges in conversations at the school and employment settings. The design employed an uninterrupted baseline phase and intervention phase for the school, training setting, which established evidence of progress toward social communication skill increases. Concurrent to the school, training data collection, generalization probes were conducted in each participant's employment setting. The analysis of the target behaviors was conducted using systematic observations based on clearly defined behaviors described in the measurement section. Each participant was observed in conversations separate from the other participants in both the school and employment settings to establish experimental control of the intervention. Additionally, Tau-U effect size analyses were conducted to provide further evidence of the impact of the intervention.

Participants

Four high school students with ASD, three males and one female, participated in this study. These particular participants were chosen because they were participating in part-time volunteer employment experiences as part of their high school curriculum. At the time of this study, students with ASD, specifically high functioning aspects of ASD, in this community were often participating in college-preparatory curriculum and some students such as these participants were also participating in career exploration activities. At the time of this study, two students were 20 years old, one was 19, and one was 18. The presence of ASD was identified through verification

from the Individualized Education Program (IEP) with a diagnosis of ASD. Table 1 summarizes the demographic data. The students' names are aliases to keep their identities anonymous.

Table 1
Sampling Results.

Descriptives	Brett	Misty	Steven	Alan
Age	19	20	20	18
IEP Disability Diagnosis	HFA	AS	PDD-NOS	AS
Volunteer Job Sites	Custodian Dishwasher	Mail Delivery	Custodian	Teacher's Aide

Note: At the time of this Study, the following diagnoses were still used in the field: HFA = High Functioning Autism, AS = Asperger Syndrome, PDD-NOS = Pervasive Developmental Disorder – Not Otherwise Specified. Study was conducted prior to the combination of these categories under one spectrum – ASD.

Peer Models. Peer models without disabilities were recruited to act as conversation partners in the school setting. Three peer models were recruited: two, 17 year old females from the high school and one, 20 year old female from a local university. Coworkers in the employment setting were the conversation partners for the generalization settings.

Peer model training. During a one-hour session prior to baseline, the three peer models learned about the study, the core components of the three social communication skills, and their roles as a conversation partner. The peers did not have access to any private diagnostic information or assessment results regarding the participants with ASD. However, they were informed of the general characteristics of individuals with ASD. Video clips of modeled conversations using the conversational components (i.e. supporting comments, follow-up questions, and bridging comments and questions) were shown. In addition, the peers were trained to respond appropriately when the participant used any of the three skills and demonstrated expected non-verbal cues such as eye gaze shifts and gestures towards or away from the partner.

Setting

School. A counseling office at a Midwestern, suburban high school was used as the training setting and for the baseline and intervention data collection for Alan and Steven; an empty classroom was available for Misty and Brett's data collection and intervention training. The intervention consisted of training on each of the three skills twice a week for 20 minutes. Conversations with peer models for data collection occurred once or twice a week for about 8 minutes. Peer models accompanied the researchers during the training with each participant and then engaged in conversations with the participants immediately after the training. Generalization probes were collected once a week in each participant's employment setting in baseline and intervention phases with data collected in intervention within one day.

Employment Setting. The cooperating school placed each participant on a community volunteer job site that aligned with their interests. Each job site focused on developing employability skills. Each participant had some job coaching support ranging from side-by-side coaching to consultative coaching. Steven volunteered at a community thrift store; Misty volunteered at a

local nursing home; Alan volunteered as a teaching assistant in a special education classroom; and Brett volunteered at two jobs during the study, one at a community pool and the other at a local restaurant. The jobsite times were one hour in length, and the participants had a significant number of tasks to complete in the short time they worked. Therefore, supportive comments were presented most often and became the focus of the generalization data probes.

Measurement

Dependent Variables. This study focused on observing social conversation skills. Data were collected using a partial interval recording method for: (a) making supportive comments, (b) asking follow-up questions, and (c) using bridging responses. These three skills build upon each other with supportive comments being a foundational skill that is used across various settings and is the most simplistic of the three skills. Asking follow-up questions builds on the supportive comments by asking a more in-depth question related to a supportive comment topic. Making bridging responses in a conversation is the most challenging of the three skills and requires the speaker to bridge from one conversation topic to another related topic which may change the subject. In a casual conversation with a peer, supportive comments will occur most often; follow-up questions will happen some of the time, and making bridges will be the least frequent (Winner, 2008). All three skills increase the mutual verbal exchange in a conversation by developing the participant's ability to actively listen and demonstrate interest in the partner's topic while still having the option to discuss his or her own topic of interest at a reasonable rate (Winner, 2008). Thus, the use of one or more of these skills indicated successful exchange in the social conversation. The following information operationally defines each skill.

Skill 1: Making supportive comments. This skill required that the participant maintain a shared point of reference with the partner, listen to the partner's topics of interest, and develop short, positive responses related to the partner's topics. Supportive comments could be verbal responses such as "Oh Yeah," or "Right!" or nonverbal responses such as head nodding.

Skill 2: Asking follow-up questions. This required that the participant ask follow-up questions to probe for more information about a partner-initiated topic of interest. Follow-up questions gathered in-depth responses to a topic (e.g. "So you went to the Arch in St. Louis." "What was it like?" "Did you get scared at any point?").

Skill 3: Using bridging responses. This required the student to introduce a new but related topic to the conversation (e.g. "You went to the Arch. Cool. I've been to the Washington Monument"). Bridging responses are designed to move the conversation toward a related topic of interest while keeping within the general conversational topic (Winner, 2007).

Observation checklist. Prior to this formal study, an informal pilot study was conducted to establish which components of the curriculum were essential to be taught in the formal study; the observation checklist resulted from this informal, pilot study. For the formal study, this observation checklist measured the frequency of intervals of the social conversational skills. Partial interval recording measured the occurrence or non-occurrence of any of the three skills in ten-second intervals during the length of the conversation. The school settings were naturally conducive to longer conversations as they were in casual, comfortable environments with few time constraints. In the school setting, if the participants demonstrated any of the three social

conversation skills, the researchers recorded a 1 for the interval; if none were used the researchers recorded a 0. *The checklist can be viewed by contacting the author.*

The conversations on the job site were shorter due to the one-hour work time constraints and the large number of tasks to complete. Subsequently, the participants were rated on their use of the supportive comments skills. If supportive comments were present, the researchers counted the interval as a 1; if they were not present, the researchers recorded a 0. For each setting, the researchers calculated a frequency of intervals for data recording purposes.

Design

A multiple baseline across participants was chosen to determine if there was a functional relation between the intervention and the participants' social communication skills. All three skills were assessed for each participant as one comprehensive social conversational skill labeled *social communication skills*. The researchers assessed social communication skills twice per week without interruption in the school setting, while the supportive comments probes in the generalized employment settings occurred either on the same day or within 1 day of the assessment in the school setting.

As a result of random assignment, baseline data collection started with Steven, then proceeded to Brett, Misty, and Alan. The introduction of the intervention was also staggered across the participants based on the consistency of trends within their baseline frequencies. As a result of the baseline data collection trends, Steven was the first to receive the intervention as he demonstrated 3 of 4 baseline frequencies in the same range. Brett followed Steven with 3 of 5 consistent baseline frequencies in the same range showing a trend. Misty received the intervention next after her upward trend in frequencies leveled out. Alan was the last to receive the intervention after data demonstrated 4 consistent baseline frequencies.

Effect Size Calculation. Visual inspection of the graphed data occurred throughout and at the conclusion of the study to identify the impact of the intervention on the social communication skills of the participants. Tau-U effect size calculations were also conducted to provide experimental control for positive baseline trends existing in two of the four participants' data. Using an effect size analysis in single case designs provides the opportunity to evaluate positive baseline trends to determine their significant impact on the intervention trends. Parker and colleagues (2011) recommended Tau-U for trend control because it does not irrationally inflate the ceiling of the effect size and instead keeps the y-scale within reasonable limits.

In the present study, Tau-U controlled for the positive baseline trends in two of the four participants by using the online calculator found at http://singlecaseresearch.org which calculates non-overlapping data between baseline and intervention phases, reversing the sign of the data series and then re-computing the full trend. These three steps impose a rational ceiling on control. To provide consistent application of experimental methods, the researchers applied the Tau-U calculation to all four participants resulting in means, standard deviations, p-values, and effect sizes for all eight data sets (school and employment settings for all four participants).

Procedure

The researchers conducted the study over the course of 10 -14 weeks which varied due to the staggered baselines. The intervention training was introduced and instructed for each participant over five to six weeks and consisted of four components: (a) skill-specific training, (b) social behavior mapping; (c) self-evaluation; and (d) peer modeling. The skill-specific training activities and social behavior mapping were derived from *Social Thinking* (Winner, 2007). Training addressed one of the three conversational skills (e.g. supportive comments) and occurred approximately twice a week using discussions, role playing, and demonstration techniques. These activities taught the participant to anchor his or her thoughts on the conversation partner to increase social conversational skills. As well, each participant constructed a social behavior map of the recent peer model conversation to problem solve solutions. The social behavior map visually organized expected and unexpected behaviors and consequences for a social interaction and provided an opportunity to problem solve similar settings and contexts in future conversations. Figure 1 displays a sample Social Behavior Map.

Figure 1.
Social Behavior Map Example.

Setting: Cafeteria. There is not necessarily a 1-1 correlation between the behavior listed and the feelings or consequences experienced. Any or all of the behaviors listed could produce any or all of the feelings or consequences listed.

Expected Behavior	**Feelings of other people**	**Consequences**	**How you feel about the consequences**
1. Sit with peers 2. Eat your own food 3. Use manners 4. Have small talk 5. Clean up your trash	Comfortable Friendly Safe Happy Interested in the conversation	Peers may want to talk to you again You and this group may sit together again You enjoy your food They enjoy their food You may talk to your peers later in another class	Happy Safe Excited to have peers to sit with Interested in sitting with them again
Unexpected Behavior	**Feelings of other people**	**Consequences**	**How you feel about the consequences**
1. Not talking to peers sitting with you 2. Sitting alone 3. Eating other people's food 4. Arguing with peers 5. Leaving trash on table	Sad Angry Frustrated Disgusted Worried about why you are sitting alone Confused about why you won't talk to them	Your peers: May not sit with you again May not talk to you later in the day in another class May get up and walk away May say hurtful things to you when you argue May tell an administrator about your behavior	Frustrated Angry Sad Lonely Upset

In combination with the social behavior mapping activity, the participants evaluated video clips of their conversations with the peer models to identify strengths and areas for further development. The researchers posed questions to encourage self-evaluation: (a) what did you think of this conversation; (b) what went well and why; and (c) what was difficult and why? The participants identified action steps to use for the next conversation.

Intervention Fidelity. A checklist of the activities associated with each lesson was used to assess fidelity and determine if the intervention was delivered as intended by the curriculum resource, by the guidelines of the study, and to each of the participants in a comparable manner. The researchers viewed the checklist before each lesson and completed it after each lesson as a fidelity self-check. Additionally, a graduate student blind to the study was asked to observe three sessions with three different participants to determine whether implementation occurred in the same manner for each participant. The graduate student's results indicated similarity across what intervention the participants received and fidelity to the goals and objectives of each lesson. Treatment fidelity across all three sessions was 95%.

Inter-observer agreement. The peer conversations in school were video recorded for inter-observer agreement. Two researchers simultaneously recorded data across peer conversations representing 20% of Brett's conversations; 15% of Misty's conversations; and 13% of Alan and Steven's conversations. These last two percentages were low as a result of faulty recordings that were difficult to measure and the inability for the second researchers to attend the live conversation. The percentage of overlapping observer data was determined by dividing the number of agreed upon intervals by the total number of intervals possible. Inter-observer agreement between the two recorders was 96%.

Inter-observer agreement for the employment conversations was conducted in a similar manner. Five employment conversations (1 for Misty, 3 for Brett, and 1 for Steven) were video recorded for inter-observer agreement. Misty and Steven's employers allowed the researchers to record one session given the disruption that would occur if two researchers were observing during the job setting. Brett's second employer allowed the researchers to record 3 sessions but his first employer refused since it was a public, community pool setting. Inter-observer agreement data were not collected for Alan's employment setting as he worked in an educational setting, and the employer was concerned that consent would be needed for video recording of students in the classroom. Inter-observer agreement on the employment conversations was 97%.

Social Validity

Typically developing threshold. To determine a consistent threshold for the use of social communication skills in natural conversations among typically developing adolescents and adults, one triad conversation and six dyad conversations were recorded from a convenience sample of typically developing individuals (i.e. 3 female teens, 2 female young adults, and 2 male adults). This established a natural, social conversational mean for comparison to the participants' skill usage. The researchers utilized the same interval sample data collection and analysis procedures to determine an overall percentage score. Results for use of any of the three social communication skills during a natural conversation for a typically developing adolescent or adult was an average of 53. This established the criterion for the typically developing

threshold, and was represented on the data graphs as a dotted black line. *Sample excerpts from the conversations can be received by contacting the author.*

Results

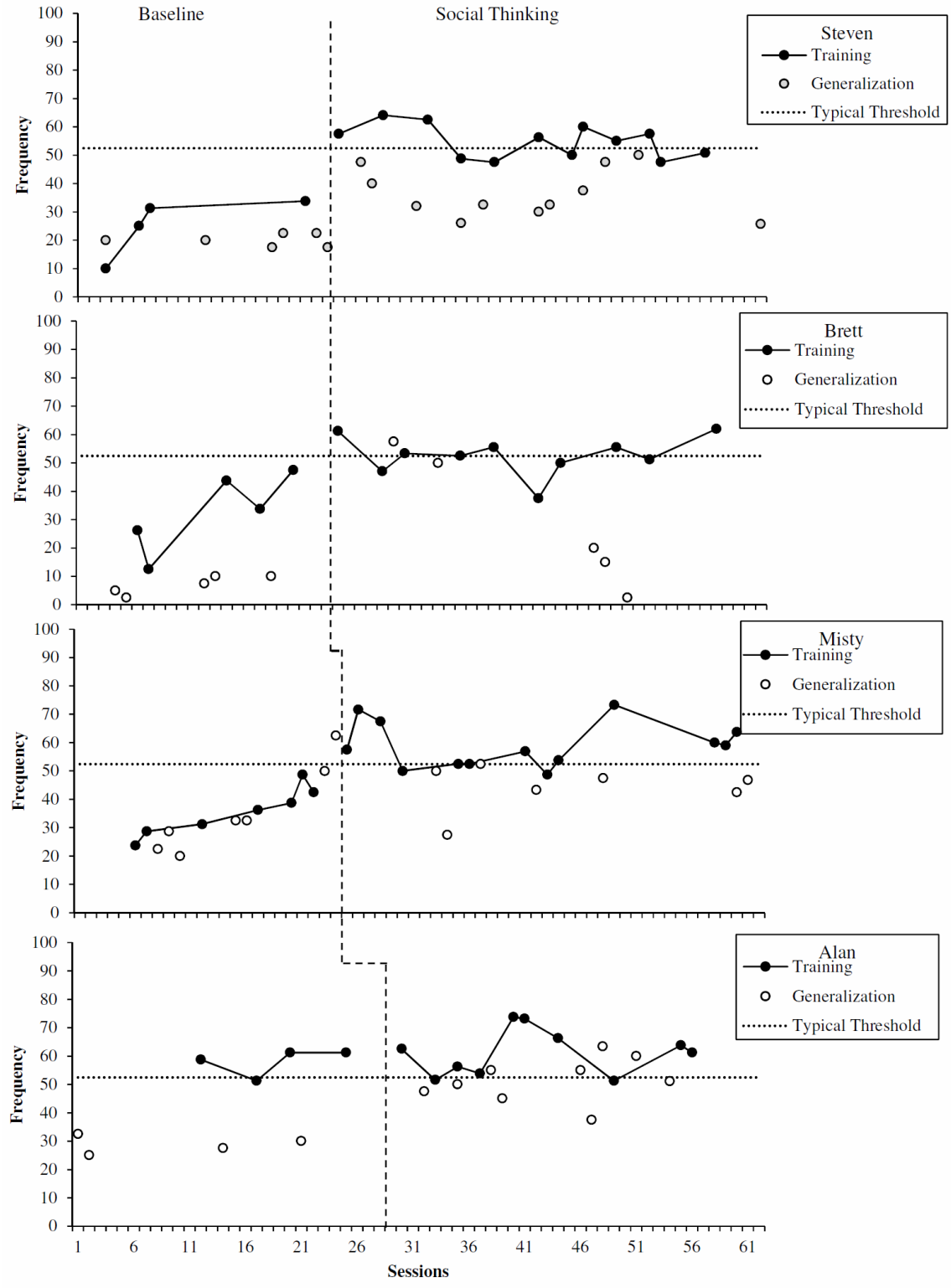
The graphed results displayed in Figure 2 indicate that *Social Thinking* combined with peer modeling and self-evaluation was effective in the school setting at increasing social communication skills for three of the four participants. In the generalized employment setting, the graphed results of the probe data indicate that two of the four participants increased their use of supportive comments in conversations with coworkers. One participant (Alan) didn't display significant increases in the school setting but demonstrated significant growth in the generalization setting. Table 2 displays the effect size calculations for the graphed results as well. Graphed and effect size results are explained in the following sections outlined for each participant.

Table 2
Effect Size Tau-U Results

	School Setting				Employment Setting			
Participants	BM(SD)	IM(SD)	Effect Size	Value	BM(SD)	IM(SD)	Effect Size	Value
Steven	25(10.7)	54.8(5.8)	1.000	0.004*	20(2.0)	33.9(10.1)	0.846	0.012*
Brett	32.8(14.1)	52.6(7.1)	0.880	0.007*	7.0(3.3)	29.0(23.6)	0.653	0.090
Misty	35.7(8.5)	59(8.0)	0.989	0.001*	35.5(15.3)	44.3(8.2)	0.367	0.250
Alan	58.1(4.7)	61.4(8.2)	0.325	0.358	28.8(3.2)	51.6(7.9)	1.000	0.006*

**=indicates statistical significance at the .05 level or better. BM = Baseline Mean, IM = Intervention Mean*

Figure 2.
Graphed Results.



Steven. Steven's results indicated growth from baseline to intervention in the graphed results for both the school setting and the employment setting. Specifically, his school setting data resulted in a baseline mean of 25 (SD 10.7) and a significant increase in intervention of 54.8 (SD 5.8) corresponding to a highly significant 1.0 effect size. Additionally, his generalized employment data were significant with a mean of 20 (SD 2) in baseline and 33.9 (SD 10.1) in intervention resulting in a moderately significant 0.84 effect size. Steven also showed growth regarding the typically developing threshold in intervention as all of his data points centered around the threshold in the school setting and half of his data probes in the generalized setting.

Brett. Brett's graphed data demonstrated significant results in the school training setting as well with a baseline mean of 32.8 (SD 14.1), and an intervention mean of 52.6 (SD 7.1) which produced an 0.88 effect size. Brett's graphed results indicated an ascending baseline which was accounted for with the TAU-U effect size. Brett's generalization results showed initial growth at his first job site with a stark increase to 60 in comparison to his baseline mean of 7 (SD 3.3). However, at the start of his new job, he dropped back to baseline frequencies resulting in an intervention mean of 29.0 (SD 23.6) and effect size of .65, which is approaching significance but not statistically significant. Additionally, Brett demonstrated growth in the school setting regarding the typically developing threshold as all of his data points centered around the threshold in intervention. He had inconsistent growth in the employment setting due to his job setting change.

Misty. Misty's graphed results in the school setting showed significant growth from baseline to intervention with a baseline mean of 35.7 (SD 8.5) and an intervention mean of 59 (SD 8) corresponding to a highly significant .98 effect size. Her generalization mean remained similar in intervention at 44.3 (SD 8.2) as compared to baseline 35.5 (SD 15.3) with a .36 effect size resulting in non-significant results. Her school setting resulted in growth regarding the typically developing threshold and all of her data points centered around or were above the threshold in intervention. Her employment setting did not show change towards the threshold.

Alan. Alan's graphed results in the school setting remained similar in intervention 61.4 (4.7) as compared to baseline 58.1 (SD 8.2) resulting in a .32 effect size and non-significant results in that setting. However, his generalization setting results indicated significant growth from baseline to intervention with a baseline mean of 28.8 (SD 3.2) and a significant intervention mean of 51.6 (SD 7.9) which produced a highly significant effect size of 1.0. Additionally, his school setting results maintained very close data points to the typically developing threshold and his employment setting results showed growth regarding the threshold with all but one of his data probes centered around the threshold line.

Discussion

Using social communication, peer modeling, or self-evaluation techniques to train adolescents with ASD on social conversational skills have emerged with some initial research in the past 10 years, yet intervention studies are still sparse. Specifically intervention studies that combine all three techniques are very limited. Similarly, evidence regarding the generalization of social communication skills to employment settings for adolescents with ASD continues to be an emerging field of research. This particular study provided preliminary data to narrow these

research gaps and suggested the effectiveness of the innovative intervention of *Social Thinking*. The information gleaned from this preliminary study can inform enhancements to future use of this curriculum.

Previous results of social communication studies have focused primarily on young children in school settings. Othman and colleagues (2015), Reaven and Hepburn (2003), and Sofronoff, Attwood, Hinton, and Levin (2007) used cognitive behavioral therapy with young children to improve their social skills with peers. Solomon, Goodlin-Jones, and Anders (2004) used social communication skill training to address social skill deficits specifically in children with ASD. Mandelberg and colleagues (2014) expanded the field to address social skill development with adolescents with ASD. This social communication study provided results for adolescents and young adults with ASD in employment settings, within which few studies had been conducted. The study also adds to the preliminary evidence being collected on the efficacy of the *Social Thinking* curriculum (Crooke, Hendrix, & Rachman, 2008; Garris, 2007; Lee, et al., 2015). Social communication was defined in this study as using one or more of the three skills: supportive comments, follow-up questions, and bridging responses during conversations with peers. Overall, three of the four participants showed promising skill growth in using social communication skills during intervention in the school setting with Steven showing significant skill growth upon visual inspection and Misty showing significant growth with effect size analysis. The combination of problem solving, inherent in the social behavior mapping and self-evaluation, and the skill-specific training provided by the researchers and through peer modeling allowed the participants multiple opportunities to observe the skills in natural conversations and then adopt the skills for their own use in future conversations. Having regular instruction in the use of these skills resulted in positive effects in the casual school setting conversations with peers. All three social communication skills taught in this study are natural components of a casual conversation with peers. Teaching these skills and providing natural opportunities to use them with peers increased the participant's development of the skills.

Generalization of the intervention to the employment setting yielded promising results for the use of supportive comments with two of the four participants. A lack of quick responsiveness in conversations has been a recurring theme for why adults with ASD are not sustaining employment (Hurlbutt & Chalmers, 2004; Jennes-Coussens, Magill-Evans, & Konig, 2006; Stitcher et al., 2010; Volkmar et al., 2014). Not surprisingly, prior to the intervention, three of the participants were not actively using supportive comments in their employment setting as is evident by low or inconsistent baseline data probes for Brett, Steven, and Alan. Notably, for two of these three participants, Alan and Steven, supportive comments increased significantly in the generalized setting. Brett's job site data can be considered an outlier since he changed jobs during the study. His initial intervention probes suggested the use of supportive comments was on the rise, but his change of jobs interfered with making a functional determination of the data's impact. Misty's data indicated that further targeted intervention may have been needed for her generalization to occur. Overall growth for two of the four participants provides preliminary evidence of the generalizability of the intervention to an employment setting.

This intervention provides notable impact on the equitable exchange that occurred between the participants and their same-age peers. Within the school setting, adolescents with ASD often struggle to maintain conversations and have equitable exchanges of information that foster

further conversations in the future (Pugliese et al 2015). This study's results indicated that the *Social Thinking* strategies, combined with peer modeling and self-evaluation, assisted three of the four participants to maintain reciprocal conversations with their same-aged peers. Specifically, Steven's data indicated the most significant growth from baseline to intervention in the school setting with an effect size of 1.0, with Misty's growth effect size of .98 being very close behind. Furthermore, having two of the participants generalize the skills with significant improvements in the employment setting demonstrated additional positive growth as a result of the intervention. While Alan was an outlier in the school setting by demonstrating skill acquisition in baseline and little to no change in his use of the skills in that setting, he showed substantial growth in the employment setting with use of supportive comments resulting in the largest effect size of 1.0. Having access to a problem solving and social communication strategy that he could apply to an employment setting where he was having difficulty engaging in equitable conversations proved valuable for him to improve this skill.

Future research may need to allow more time for direct development of the supportive comments skill in employment settings to acquire greater generalizable results. Most job settings for adolescents with disabilities, such as the ones in which the participants were employed, are introductory jobs focused on skill training for one hour of the day. While there are opportunities to use supportive comments in short conversations, the opportunities may be limited due to the short time period the students attend the job and the lack of conversation partners. The preliminary results from this study may indicate that supportive comments development in adolescent job settings may improve the sustainability of employment for youth with ASD.

Limitations. Some limitations materialized during data analysis, possibly as a result of the preliminary nature of the study. The sample size in this study is small given the nature of the single case design methodology. Small sample sizes can cause limitations on the generalizability of the data.

The use of Tau-U was employed to address positive baseline trends, specifically in Brett's data and Misty's data. While Tau-U adequately accounts for the effects on experimental control that an ascending baseline can cause, it is still important to identify the limitations inherent within an ascending baseline. Allowing for a longer baseline for Misty and Brett may have leveled out the data trend. However, Parker and colleagues (2010) ascertained through thorough analysis of over 30 single subject design studies with positive baseline trends that this trend in visual representation does not necessarily correlate with a reduced functional relationship between the intervention and the participant's skill development if combined with the use of a sensitive effect size calculation to control for the positive trends. Tau-U provided the sensitivity to account for the trends in this study.

Furthermore, Misty's generalization results may have been improved if the intervention was provided in the employment setting in addition to the school setting. Training the participants in one setting but not reviewing the skills in the generalized setting can cause some limitations due to the lag between when the intervention was trained and when the generalization setting was observed. Having the opportunity to review the skills prior to entering the employment setting may have beneficial implications for future iterations of this intervention. Additionally, in the employment setting there were limitations on the use of only one social conversational skill:

supportive comments. Since the settings were short and very task oriented, the conversations with coworkers were limited in length and depth.

Finally, non-verbal communication skills were not directly examined in this study. However, literature in the field of autism has recognized the need for individuals with ASD to improve their awareness of and use of non-verbal communication skills (Myles, 2005; Simpson, Myles, & LaCava, 2008). The field would benefit from an examination of the impact of this intervention on non-verbal receptive and expressive communication.

Conclusion. The preliminary results of this study support the promise of this intervention to improve social communication skills among adolescents with ASD. The results warrant further investigation of the intervention and the use of social communication skills in a variety of settings. Addressing the development of social communication skills in the employment setting will promote positive outcomes for adolescents with ASD. In addition, subsequent iterations should also address the use and interpretation of non-verbal communication skills as such skills are critical for success in adult settings. This preliminary use of strategies from the *Social Thinking* curriculum to increase the employability of adolescents with ASD holds promise for the field and may benefit the long-term outcomes of adults with ASD.

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Hopes and Hurdles: Parents' Perceptions and Experiences with Transition Planning for Students with Intellectual Disabilities

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Abstract

The Individuals with Disabilities Education Act (IDEA) mandates parents' participation as a necessary component of providing an appropriate education to students with disabilities. Despite these guidelines, parents report challenges with joining and contributing to the individualized education program (IEP) team as equal and valuable educational partners. We used purposeful sampling techniques to interview ten parents about their perceptions, satisfaction, and experiences related to the postsecondary transition planning process for their child. Findings indicated the parents identified hopes and hurdles when planning for their child's postsecondary life. The parents had hopes for individualized transition plans, high expectations, and collaborative practices characterized by mutual respect and open-mindedness during the planning process. Meanwhile, parents also reported hurdles that included experiencing conflict with professionals when advocating for their child, as well as uncertainty and apprehension for their child's future. Each construct is discussed in detail, along with implications for practice and future research.

Keywords: parents, transition planning, intellectual disability

Hopes and Hurdles: Parents' Perceptions and Experiences with Transition Planning for Students with Intellectual Disabilities

The most recent reauthorization of the Individuals with Disabilities Education Act (IDEA) (2004) requires school districts to provide transition services by the age of 16 to students who receive special education services (IDEA 34 CFR § 300.320(b)(c)). Transition services include coordinated activities designed to enhance academic and functional skill development in order to promote continued opportunity and achievement following high school graduation in accordance with student postsecondary transition goals (IDEA 34 CFR § 300.43(a)). The development of these postsecondary transition goals assists individualized education program (IEP) teams with (a) targeting academic, social, and emotional skills relevant to student postsecondary transition goals during daily instruction, (b) quantifying and evaluating student progress toward postsecondary transition goals, and (c) identifying and accessing school and community-based services and supports that can assist students with attaining their postsecondary transition goals (IDEA 34 CFR § 300.43(a); Mazzotti et al., 2009). Since transition planning links school-based services with students' postsecondary goals and interests, as well as bridges the gap between school and community supports, transition planning plays an important role in facilitating the

success of young adults during life after high school (Papay & Bambara, 2014; Shogren & Plotner, 2012; Test et al., 2009).

To ensure transition plans are meaningful for students and their family members, educators are encouraged to customize postsecondary transition planning by including students' strengths, needs, goals, and interests (Neece, Kraemer, & Blacher, 2009). As of the impact of the process on students' futures, this is an important discussion for all IEP team members. Therefore, the IDEA requires that parents and the students are notified and invited to participate in discussions related to these postsecondary planning meetings. Despite these legal provisions aimed to encourage educators to collaborate with parents, research indicates that much of the postsecondary planning for students, specifically the procedural and substantive requirements, are left to the discretion of educators with little feedback from parents (Kellems & Morningstar, 2010).

Parents' Involvement during Postsecondary Transition Planning

Hayes (2011) describes parents' involvement within the school setting as an essential educational component that can lead to a consistent dialogue between parents and student related to achievement. This is not surprising given that research supports the notion that parents are often the most consistent teaching presence within a child's life (Darch, Miao, & Shippen, 2004; Henderson & Mapp, 2002). In fact, researchers describe a correlation between parents' involvement and postsecondary transition planning, leading to successful postsecondary outcomes for students with disabilities, even when considering factors such as family size and socioeconomic status (SES) (White & Rae, 2016). According to the National Longitudinal Transition Study - 2, a national study on the postsecondary experiences of students with disabilities, transition plans that actively involve students and their family members are more likely to facilitate satisfaction with life after high school among individuals with intellectual disabilities (ID) (Papay & Bambara, 2014). In addition, students whose parents expected them to experience postsecondary educational and employment opportunities were more likely to experience these opportunities after high school (Papay & Bambara, 2014). Given that students with ID often experience difficulties with language and communication, parents are identified as key stakeholders who are the most aware and available to communicate their child's strengths, needs, goals, and preferences related to important considerations when planning for the future (Neece et al., 2009).

While parents' involvement is undoubtedly a key component to successful transition planning, this responsibility does not come without parents' concerns and obstacles. Strnadova and Evans (2013) identified the transition to young adulthood as one of the most stressful experiences for family members of children with ID. One major concern is contributed to the termination of special education services covered through IDEA after reaching 21 years of age (Gillan & Coughlan, 2010). The large and infamous gap between school resources and community life options after IDEA can be incredibly frustrating and overwhelming for parents (White & Rae, 2016). Some noteworthy parental concerns following IDEA coverage include obtaining education, employment, and community access opportunities for their children. This concern is further heightened with research indicating that students with ID and autism spectrum disorder (ASD) are less likely to obtain employment, live independently, or access the community on a regular basis compared to their typically developing peers (Shogren & Plotner, 2012). Other

parental concerns include identifying a plan for guardianship and caretaking should the parents become deceased or when the parents are no longer capable of caring for their children due to their own aging health issues (Gillan & Coughlan, 2010). Such parental concerns point to the importance of including family members through the transition planning process with the intent to create a plan that can best prepare students and their families for the future.

Parents' Perceptions and Experiences with Postsecondary Transition Planning

Parents report feeling unheard and uninvolved when it comes to their child's postsecondary transition plan (Hetherington et al., 2010; Martinez, Conroy, & Cerreto, 2012). Research related to parental involvement with postsecondary transition planning calls for additional research to identify parents' priorities during transition planning (Henninger & Taylor, 2014), as well as strategies for strengthening parents' involvement during transition planning (Shogren & Plotner, 2012). The current study attempts to address each of these important issues by investigating parents' experiences (interactions with educators during IEP meetings, specifically, as well as collaboration with educators related to postsecondary transition planning, in general) and perceptions (parents' thoughts, feelings, and reflections related to these experiences) of the postsecondary transition planning process through qualitative interviews. Specifically, the following research questions were addressed:

Research Question 1: What were the parents' perceptions of the transition planning process for their children with Intellectual Disabilities?

Research Question 2: What were the parents' experiences with the transition planning process for their children with Intellectual Disabilities?

Method

Using qualitative phenomenology, the authors interviewed parents about their level of involvement, perceptions, experiences, and satisfaction with the postsecondary planning process. Participants were recruited using purposeful sampling techniques with the intent to identify participants who understood this phenomenon and had personally experienced postsecondary planning meeting practices for their child. All participants were recruited through email. The first author sent an introductory email that explained the purpose of the research to a western state parent training information center and a state level parent support organization for students identified with ID. The email described the criteria for participation in the study and, if interested, requested potential participants to email the first author. Inclusionary criteria for participation included the following: (1) parent of a child who received special education services under the eligibility category of ID, (2) participant's child had to be either currently in high school or had to have graduated from high school prior to this study. Through this recruitment process, ten parents of children identified as having an intellectual disability met the criteria and were selected for the study.

Participants

Eight mothers and two fathers were included in this study. Participant demographics are summarized in Table 1.

Table 1
Study Participants

Participant Pseudonym	Child Pseudonym/ Graduation Year	Child Description
Tabetha	Tony/High School Student	Tony is currently in high school and participates in both a work-study program and general education classes with his peers. Tony hopes to have a college experience following his graduation from high school.
Diane	Denise/High School Student	Denise is currently in high school and is in the process of receiving on-site training in high school for community-based work. Denise would like to work at an ice cream parlor, pizza restaurant, or hospital following her graduation.
Kathy	Kevin/2015	Kevin graduated from high school in 2015. Following his graduation, Kevin volunteered at a local food pantry, worked at a football store during football season, and has taken courses through a postsecondary education program at a local University.
April	Alice/2014	Alice graduated from high school in 2014. Following her graduation, Alice worked as a hostess at a well known restaurant chain, served as an anchor for a local news station, and served as a global messenger for Special Olympics.
Tanya	Tina/2014	Tina graduated from high school in 2014. Following her graduation from high school, Tina volunteered at a local library and clothing store.
Jill	Judy and Joy/2010 and 2007 respectively	Judy and Joy graduated from high school in 2007 and 2010 respectively. Following their graduation from high school, Judy and Joy worked within their local community at a local thrift store and clothing stores. They also engaged in recreational opportunities at a local bowling alley and recreation center.
Gertrude	Gabby/2009	Gabby graduated from high school in 2009. Following her graduation from high school, Gabby took courses at a local University, worked at a beading shop, and opened her own jewelry business.

Rachel	Rylee/2006	Rylee graduated from high school in 2006. Following her graduation from high school, Rylee earned two certificates at a local community college, worked at a well-known retail store and a local thrift store, and served as a self-advocate for individuals with disabilities.
Carl	Cindy/2005	Cindy graduated from high school in 2005. Following her graduation from high school, Cindy worked as a supported employee making jewelry for a local brewery and assisted in manufacturing and assembly at General Electric.
Barry	Betty/2003	Betty graduated from high school in 2003. Following her graduation from high school, Betty worked at a retail store.

Interviews

The first author conducted all interviews over the phone. During the interviews, participants were asked to describe their experiences as members of their child's postsecondary transition planning team. Each interview was digitally recorded and transcribed verbatim (participants were allowed to read the transcribed interviews) in order to accurately portray participant thoughts, perceptions, and experiences related to the postsecondary transition planning process. An interview protocol was used as a guide; however, the interviews were open ended and participants were encouraged to share their experiences and thoughts beyond that of the interview protocol. A semi-structured interview approach was used with the intent to maintain relevance to the research topic, while simultaneously allowing the true voice of the participant to be included during the interview process. Phone calls ranged in duration from 25 to 80 minutes (please see Appendix A for the interview protocol).

Data Analysis

Coding procedures included line-by-line open coding with the qualitative software program Nvivo. Using line-by-line coding procedures, the authors were able to analyze all components of the interview transcripts, paying close attention to the identification of concepts, terms, and ideas prevalent throughout each interview transcript. The first step in the coding process was reading each transcript line-by-line and giving each emerging theme a specific code. Next, emerging themes within each interview transcript were grouped with themes from different interview transcripts based on key terms, ideas, and philosophies. Finally, themes that universally represented participant responses through individual interviews were identified and expanded upon within the findings section of this research study.

Trustworthiness

Using peer debriefing, the interviews were read by both authors and analyzed using the aforementioned coding procedures to ensure the themes that emerged from these interviews accurately represented the experiences and perceptions of parents interviewed as part of this research study (Creswell, 2007). Codes, categories, themes, and quotations were discussed between the two raters with any disagreements discussed until mutual agreement occurred. There was agreement across the codes, themes, and quotations. The authors conducted a member check that involved emailing the themes that emerged during the coding procedures to each interview participant. The goal of this member check was to ensure the themes identified by the authors accurately represented information shared by participants during their interviews (Reilly, 2013). Seven of our ten participants responded and verified that the themes identified by the authors accurately reflected their experiences and perceptions during the transition planning process.

Findings

Findings revealed the parents' perceptions and experiences with postsecondary planning fell under two major themes referred to as hopes and hurdles. Within the hopes theme, parents spoke about the value they held and promoted that their child receives an individualized transition plan and high expectations when preparing for the future. Conversely, while advocating for these hopes, the parents spoke about experiencing hurdles by way of low expectations, challenges or disagreements during transition planning, uncertainty, and apprehension about their child's future. These themes are described in detail in the following section.

Parents' Hopes for the Future

Throughout the interviews, parents conveyed a sense of hope they held regarding their child's future throughout the transition planning process. Such hope for the future included the desire for their child to experience a high quality of life as a young adult. Specifically, all parents hoped their child would receive an individualized transition plan that would lead to achieving postsecondary employment or education outcomes. Relatedly, the parents also described the importance of school teams maintaining high expectations for their child as they prepared to transition into postsecondary life.

Individualized transition plans. One key underlying message related to the parents' hopes for their child's postsecondary transition opportunities was the importance of individualization. Parents hoped their children's strengths, interests, and personal goals would guide the development of their postsecondary transition plans. They also hoped their children's postsecondary transition plans would support their children with achieving their full potential and, in the process, maximizing their quality of life as young adults. For example, while sharing her experiences advocating for postsecondary educational opportunities for her son, Kevin, Kathy stated, "I know he has Down syndrome, this is not something I'm ignoring. I'm asking what supports are available. They are not willing to go there." Kathy's frustration stemmed from her perception that Kevin's disability label, rather than personal abilities and interests, was the determining factor in the transition goal that was suggested by members of his postsecondary transition planning team. Parents' responses related to their child's individualized postsecondary transition plans are categorized below based on the post-school outcomes that guided the transition planning process.

Postsecondary employment. Parents consistently emphasized the importance and need for employment opportunities to enhance their child's self-esteem, access to the local community, and overall personal happiness and quality of life. For example, Barry shared that he was "thrilled" when his daughter, Betty, was able to obtain an employment position at a well-known retail store. Barry stated, "What's the purpose of a school program? It's to train a child to be in the community, and that means a home of your own and a job you can be proud of." Likewise, Rachel expressed her satisfaction with both the quality of her daughter, Rylee's, employment opportunity following high school graduation, as well as the number of employment hours her daughter received. Regarding Rylee's employment position at a local thrift store, Rachel explained, "She works 16 hours a week at the [thrift store]. That's a good amount for her. We're very happy with that arrangement." April discussed the joy and satisfaction she and her daughter, Alice, shared upon both receiving positive feedback from Alice's employer and realizing Alice was becoming increasingly independent in the workplace. Recalling conversations with her daughter's job coach and employers, April said, "Again, the job coach is telling us, I mean she rarely comes anymore, but all the feedback she gets is very positive."

While paid employment was described as a high priority for some families, it was not a necessary prerequisite to meaningful employment opportunities for all parents. Some parents stressed the importance in obtaining individualized employment opportunities, whether they were paid employment or not. For example, Jill, while discussing Judy and Joy's participation in a volunteer (non-paid) transition program, shared, "They really look forward to going. If you have a day that you are doing something productive and you absolutely look forward to it every

single day, what better life could that be?" Tanya valued the willingness of educators working with her daughter, Tina, to investigate volunteer opportunities for Tina correlating with her strengths and interests. She explained, "My daughter is very fashionista. She likes clothes and make-up and hair. They were always trying to see what she was good at and I loved the fact that they tried to listen to me."

While some of these parents associated employment with both paid and unpaid working positions within their local communities, individualized and meaningful employment opportunities remained the key universal component of parents' hopes for the future. For example, Tanya recalled being asked whether she wanted her daughter, Tina, to have employment opportunities following her graduation from high school. Because she had perceptions of a limited consideration of potential employment opportunities for her daughter, Tanya said, "I don't want her cleaning tables. She can do more. She can do more than that."

Postsecondary education. Parents emphasized the importance of postsecondary education opportunities related to inclusion and social interaction. Kathy explained that she viewed college as the next logical step for her son, Kevin, following high school graduation. Kathy shared, "His [child's] older siblings and all the people in his grade, that's what you do [go to college]. People who'd been his friends who'd graduated, all they do is talk about college and the SAT and things like that." When asked what her son, Tony's, transition goal was, Tabetha stated, "Having a college experience. He has a very significant cognitive disability, but he wants to have the social experience and the learning of as much as possible of college."

Some parents also viewed college as an opportunity for their children to pursue leisure and employment interests as well as enhance their independence skills and access to the local community. Gertrude shared:

> *She [Gabby] took public speaking, entrepreneurship. She took some disability studies classes, women's studies, race and gender, some self-advocacy classes. She took performing arts classes, dance, music, belly dance. She took Zumba dancing. She took art classes. Just a long list of classes that she participated in, and she did it with peer support, so she had age-appropriate support in class.*

Gertrude credited Gabby's college experience in facilitating her daughter's employment success. Gabby is now self-employed and runs her own jewelry business. Rachel viewed college as an opportunity for her daughter, Rylee, to both directly pursue her interests as well as indirectly develop life skills that would generalize across a variety of real-world settings and situations. Rachel stated, "She [Rylee] was interested in theater at the time, so we wanted her to have the ability to pursue that. We also wanted her to increase her independence skills."

According to April, the benefits of postsecondary educational experiences for her daughter, Alice, were not confined to the college or university setting. April shared, "Her [Alice] goal is to get a certification in group fitness so that she can do it all on her own at this point." In addition to the self-confidence gained through completing fitness courses, taking fitness courses with her trainer allowed Alice to both model and support peers and maintain an active and healthy lifestyle.

High expectations. Parents discussed a wide range of transition goals for their children related to employment, education, community access, and independent living opportunities following high school graduation. Among these areas, the desire for high expectations was a universal need shared among all parents. While reflecting on the progress of her daughters, Judy and Joy, Jill shared:

> *You think you know your kid and you think they can't...you don't think they'll be able to do certain things. Then, all of a sudden, they just do it and you're like, oh my, I didn't know you could do that!*

April emphasized the importance of everyone, parents and educators included, maintaining high expectations for her daughter given the extremely high expectations her daughter had for herself. For example, April shared the story of Alice setting the goal of training for and completing a triathlon. April explained that witnessing Alice achieve this goal further emphasized the importance of maintaining high expectations for all students, regardless of disability labels.

Barry described the joy and surprise he felt as he watched his daughter, Betty, become more independent than he ever thought possible and move into her own apartment. Barry shared:

> *[Betty] moved into her own apartment and it has been successful beyond our expectations. We learned that we underestimated our daughter's ability to understand her world, to make decisions and to continue learning. If you ask our daughter what she is most proud of she will tell you, 'I live in my own apartment!'*

Rachel used the analogy of "taking a stab in the dark" to describe her experiences advocating for a competitive employment goal in her daughter, Rylee's, transition plan. Rachel shared, "We weren't sure where she was going, what her skill level would allow her to do, what facilities were available to her at the time." Rachel credited employment skill instruction included as part of Rachel's transition plan for helping her obtain a job at a well-known retail store following high school graduation.

Inclusive opportunities within the school and local communities. One prominent area of high expectations for parents' hopes for the future was school-based inclusion, both in the high school setting and beyond. For example, Denise praised the use of peer supports to facilitate inclusive opportunities within the school setting for her daughter, Diane. Denise reported that, in the past, Diane was infrequently provided with inclusive opportunities due to a staff shortage and the belief that she required a teacher aide to accompany her in class. Denise recalled her joy upon hearing from a teacher at Diane's new school, "No, I don't think she needs an aide." Denise explained that, given support from Diane's peers, Diane was able to be successful in an inclusive classroom setting, as well as build and maintain friendships with a larger number of her peers. Inclusion within the school setting is often a goal of students with ID as well as their parents. One mother, April, said:

> *My child has is the youngest of four and it was very important for her to be included in the typical classroom. She almost advocated for herself on that where they wanted ...*

> *typically a person with her diagnosis would be a little bit more involved in classrooms that didn't have a lot of integration. She wanted to be included in a typical classroom.*

Kathy explained her perception that, due to her son, Kevin's disability label of ID, college was not considered a realistic outcome. In fact, when Kathy sought support from Kevin's teachers and administrators in registering and preparing for the ACT, she perceived a large amount of resistance. After working hard to ensure Kevin had the opportunity to take the ACT, Kathy reported, "For a week he came home saying, 'Mommy, I took the ACT for college.' He was so happy. He was so excited. He actually got a double-digit score." Tabetha, while describing her son, Tony's, success in the general education classroom and goal of having a college experience, stated, "Presume confidence in the kids and have the highest expectations that are imaginable, that's my philosophy."

Some parents stressed the importance of inclusive opportunities within the local community settings as crucial components of maintaining high expectations for their children. One parent, Barry explained, "The old days of putting people in group homes, and earlier, literally warehouses, that day is fortunately on the moral trash heap of history. Our children have a right to be in the community." Tabetha explained the benefits of inclusion related to self-esteem and social interaction by sharing:

> *So that's why we have the young mentors that his [Tony's] peers see as really cool people, so they're kind of magnets, and then that makes him [Tony] have a higher status in his community just because he has these cool people with him.*

April explained the idea of high expectations for young adults with disabilities by emphasizing the importance of, "allowing people to dream. Having a template to say, if you do this and this, then these maybe are future opportunities for you." Whether it is employment, postsecondary education, or inclusion, maintaining high expectations for students with ID was a concept prevalent throughout interviews conducted as part of this research study.

Hurdles Experienced by Parents During Postsecondary Transition Planning

In addition to expressing hope for the future, parents also encountered hurdles as they navigated through their children's postsecondary transition planning experiences. As parents expressed their hopes for the future, they sometimes found that educators had different visions for their children related to their lives after high school. These parents shared that although they had become accustomed to the special education services and supports their children had received for most of their lives, they faced the reality of losing these services and supports upon their children's graduation from high school. Three prominent hurdles experienced by the participants during postsecondary transition planning included: (a) low expectations, (b) disagreements during transition planning, and (c) uncertainty and apprehension about the future.

Low expectations. Unfortunately, some of the parents did not believe their children were held to the same high expectations as that of their peers without a disability. Kathy shared her perception of this discrepancy:

> *When you have gifted students, people are all about their maximum potential. You have to let them hit their maximum potential. When you get these kids [kids with a disability] that's not a phrase you hear at all. I don't think that's right.*

Barry expressed similar sentiments when discussing his experiences while advocating for an employment outcome for his daughter, Betty, during postsecondary transition planning meetings:

> *We need to get over the stigma that our kids are too stupid to do a good job. They actually tend to be very conscientious employees, because they're so grateful for a job. We've got to get past this thing where 70-80% of people with an intellectual disability are unemployed. It keeps them out of the community. It also keeps them in poverty.*

April was extremely satisfied with her daughter, Alice's transition outcome; however, she also explained some concerns regarding the low expectations surrounding some of Alice's peers with disabilities:

> *We saw other kids who, just speaking in the general sense, whose ability level was probably much higher but was never really encouraged to dream big. To think that, 'What would you really like to do?' It's really bittersweet to see those kids not having jobs yet. Not really even wanting a job. I think that that is so sad because I think that creates a culture of depression and a ho hum and I'm not worthy. I'm not good. I think we are created to be contributors in a society and I think that builds that self-worth piece.*

Barry summarizes the importance of high expectations and strength-based transition planning, as opposed to low expectations and deficit-based transition planning, by stating, "If we want to create the best possible lives for our children, we focus on their capabilities not their disability."

Conflict during transition planning. Parents described experiencing conflict with educators during postsecondary transition planning meetings. Surprisingly, two parents described these disagreements as respectful, and even beneficial, components of their children's transition planning meetings. Meanwhile, other parents characterized these disagreements as including working with educators who were close-minded and even disrespectful. Each of these types of experiences, negative and positive, are shared in the subsequent section.

Negative perceptions of conflict. Unfortunately, most parents perceived disagreements with members of their child's transition planning team as unhealthy and disrespectful. Kathy explained:

> *We first brought it up [postsecondary education and competitive employment goals] in middle school. They just physically, the staff would push themselves away from the table. Push back from the table. Look up at the ceiling, roll their eyes. Look at each other. Take a deep breath and then say something rude.*

Kathy compared advocating for her son, Kevin, during these meetings to "going into battle." She also shared that, after attending IEP meetings, her neighbors and church members would say to her, "They don't like you very much, do they?" Diane described her view of transition planning

as “confrontational,” rather than a collaborative process. Regarding the inclusion of students with disabilities into the general education setting, she shared, “I know that from a lot of schools that you really have to push that issue if you want your child with special needs to be in regular classes. You really have to fight with them.”

Relatedly, some parents felt that their perspective, and the perspective of their child, were not valued or even recognized by educators during the postsecondary transition planning meetings. April emphasized the need to communicate her daughter, Alice’s transition goals and preferences. April explained, “Well, and I think it came down to if they [educators] weren't really listening to her [Alice] we needed to speak for her, because she [Alice] was speaking to us.” Other parents also shared the sentiment that their child’s postsecondary plans were predetermined without the consideration of parental and student input. Tanya explained:

> *It's like you don't tell someone that doesn't have a disability that, but you tell someone with a disability that they'd reached their potential. I think they will always learn and I think you need challenge them. I think, yes, they have a disability, and yeah, they're not going to learn at a rate, but never give up on them. Challenge and challenge. They're going to be frustrated and they're going to be mad, but it's going to help them in the long run.*

Positive perceptions of conflict. Although most parents described negative perceptions of disagreements during transition planning, two parents interviewed had more favorable perceptions of these disagreements. Gertrude described disagreements during transition planning as “healthy and beneficial” for her daughter, Gabby’s, transition planning. Gertrude explained that, within her school district, Gabby was the second student with ID that she knew of who had attended college. Since postsecondary educational outcomes among students with ID were relatively new to educators within Gabby’s transition planning team, Gertrude explained her overall perception of this disagreement with these educators by saying:

> *When you're trying something new, sometimes there's resistance, there's barriers, but I'm grateful for those, because I feel like that was just part of the process and we learned from that, we became stronger. If there were objections, we can't really overcome objections unless we know what the objections are. There were objections and there was criticism and that, and I guess at the time it was difficult, some of that, but I think that that made us stronger, and that we learned from all of that. I think everything was out in the open.*

Rather than perceiving these disagreements as a hindrance during transition planning, Gertrude perceived educator disagreements as positive since they stemmed from a genuine concern for what was best for her daughter. She further explained, “Try to seek out what the resistance and the objections are, because if it's just all behind closed doors, nobody's talking about it, you can't really overcome it.” She felt that if all members of transition planning teams prioritize the best interests of the student as well as respect one another during disagreements, these disagreements might serve as opportunities for growth rather than barriers to student success following high school graduation.

Meanwhile, Tabetha described disagreements with educators as a "give-and-take relationship" that required compromise in order to act in the best interest of students. Tabetha explained:

> *There's got to be a balance. You don't just demand everything. You've got to put some trust into what they believe is best, and they spend a lot of time with him, ...our teacher's good, so we compromise and she compromises, and we feel like we have a nice balance.*

Tabetha felt as if compromise was a healthy and necessary prerequisite to effective transition planning on behalf of her son. She also added, "You don't want to be the mad mommy where they're just like, 'Oh here that person comes again.'" Tabetha explained her willingness to compromise as a function of her trust in the educators who "spend a lot of time" with her son.

Uncertainty and apprehension about the future. All participants shared uncertainty and apprehension related to their child's transition planning meetings and life after high school graduation. When discussing his daughter, Cindy's, transition to life after high school, Carl said, "Once you get to be an adult, you are sort of kicked out in to the world." Barry shared, "I think ultimately the parents are the greatest single determiner in your child's future." This perceived responsibility appeared to lead to an internal dilemma for these parents when considering the act of advocating for the most effective and appropriate services to prepare their child for young adulthood. Barry described this dilemma when deciding between inclusion in the general education curriculum or specialized instruction related to employment:

> *There's always been the debate among parents with a disabled child. Is focus on practical life skills for employment the best thing in for your child in high school, or being in a mainstream classroom and having that socialization with her peers? That's a debate that has been there maybe for as long as I've been aware of it. I don't think it's ever going to get solved.*

Other parents expressed the challenge of balancing the need to act as advocates for their child, while simultaneously encouraging and accepting independence and autonomy. April, unsure of Alice's desire to pursue college following high school graduation, explained:

> *We had to come to grips with maybe we don't think she's ready for all this but her future might be, you know? We are the ones limiting her yet we're telling them not to limit her. We need to get on board a little bit and just see the vision too.*

Rachel highlighted the struggle to balance setting achievable transition goals while, at the same time, avoiding "settling for the status quo" when advocating on behalf of her daughter, Rylee, during the transition planning process. Despite this internal struggle, Rachel felt responsible to empower her daughter, Rylee, to self-advocate for her benefit as well as the benefit of other young adults with ID. Rachel explained of Rylee:

> *She's a self-advocate in her idea. It's our idea that she should be seen and heard, because it's never going to get better for people with disabilities unless people in the community see people with disabilities working and doing things. We want you to know [Rylee]. We want you to see what she can do.*

Discussion and Implications for Practice

This study was designed to add to the literature by offering an in-depth investigation of parents of young adults who have either moved through the postsecondary process entirely or are in the process of this experience. Although dozens of studies highlight parents' experiences with the IEP process (Mueller, 2017; Turnbull, Turnbull, Erwin, Soodak, & Shogren, 2011; Zeitlin & Curcic, 2014), only a handful of studies exist specific to parents' perceptions and experiences with postsecondary planning. Given the difference between an IEP and an IEP that includes postsecondary planning, this study is worthy of attention. Findings from this study illustrate parents' hopes for the future that include individualized transition plans with high expectations that emphasize student education and employment while maximizing inclusive opportunities within the school and community. These parents' high expectations were realized through the development of transition plans that focused on student strengths and abilities. Meanwhile, the parents also discussed experiencing both external and internal hurdles when attempting to achieve these hopes, including disagreements with educators and uncertainty and apprehension about a future without the services and supports their children had received for most of their lives.

Maintain High Expectations for all Students

Parents in this study emphasized a discrepancy between the postsecondary expectations educators had for their child, and educator expectations for children without ID. Perceptions of "low expectations" for students with ID are supported in current research on the topic (Grigal, Hart, & Migliore, 2011). For example, students with ID are more likely to have postsecondary goals related to supported or sheltered employment than students receiving special education services under any other eligibility category (Grigal et al., 2011). In addition, postsecondary educational goals related to attendance at two-year or four-year colleges and universities are less frequent compared to students under all other special education eligibility categories (Grigal et al., 2011). Consequently, students with ID are less likely than their peers who receive special education services under any other eligibility category to participate in postsecondary education programs or obtain competitive employment following high school graduation (Grigal et al., 2011). In the absence of high expectations, low achievement often becomes a self-fulfilling prophecy (Rubie-Davies, Hattie, & Hamilton, 2006). Martinez et al. (2012) state that educators often present "preselected" and "realistic" student outcomes prior to engaging in transition planning with parents and students. These pre-selected outcomes based on low expectations can lead to teachers creating a classroom environment and facilitating instruction that do not emphasize high achievement standards for their students (Rubie-Davies et al., 2006). Teachers' expectations also influence students' motivation in the classroom setting (Woolley, Strutchens, Gilbert, & Martin, 2010). To truly increase student opportunity and achievement after high school, educators must expect success from their students. This will increase the rigor and relevance of classroom education, as well as model a commitment to success for students with ID.

Individualized Transition Planning

All parents interviewed as part of this study desired their child's individual strengths and interests, as well as goals and hopes for the future, to navigate their child's transition planning process. In other words, parents wanted educators to prioritize their child's individuality over the

status quo or the typical transition recommendations for students with ID as perceived by parents. This finding is unsurprising since, regardless of whether or not a student receives special education services in high school, the desire to pursue goals and interests in life after high school is a universal experience among students transitioning to life after high school.

One method for individualizing could be achieved through planning alternatives tomorrows with hope (PATH). While transition planning for students with ID is typically led and facilitated by educators (Shogren & Plotner, 2012), PATH is a student-driven approach that prioritizes the unique strengths, interests, goals, and hopes of individual students and parents during the transition planning process (Armstrong & Dorsett, 2015; Walton & Dennison, 2015). Students themselves select team members, including family members, educators, and related service providers (Armstrong & Dorsett, 2015). While PATH is implemented differently for each individual student, general components of this process include (a) using student goals and hopes for the future to guide the transition process, (b) identifying short-term and long-term benchmarks linked to the student's transition goals, (c) identifying opportunities for skill development that will help facilitate attainment of transition goals, and (d) coordinating with school and community-based service providers to help facilitate student success (Walton & Dennison, 2015). Since students themselves are actively facilitating their transition plan for life after high school, the PATH process represents a promising approach for emphasizing the "individualized" component of IEPs.

Addressing Conflict During Educational Planning

Conflict is inevitable in special education. After all, parents and educators will not always agree on everything and are likely to have differences of opinion related to the best courses of action for students to take following their high school graduation. Despite differing opinions between educators and parents of children with disabilities, the approach to the resolution of these disagreements often seems to be the root of the problem. Parents in this study described disagreements with educators as both helpful and unhelpful during their children's transition planning meetings. For a small number of parents, disagreements helped the parents and educators better understand one another's perspective so they could identify and address potential obstacles to student transition outcomes they had not previously considered. Meanwhile, the majority of the parents characterized educators as disrespectful and close-minded during transition planning, and consequently viewed conflict as a hindrance to transition planning meetings.

When considering the issue of conflict, educators are encouraged to examine the way they respond to parents' preferences and concerns during transition planning. Acknowledging and empathizing with parents' uncertainty and apprehension during the transition process is also important to fully understand and encourage parental involvement in this process. Knowing the value in parental participation, it would also behoove educators to take time to meet with family members and actively solicit parents' beliefs and hopes about their child. Further, exploration of alternative dispute resolution practices, such as facilitated IEP meetings, could be helpful (Mueller, 2009). Research indicates facilitated IEP (FIEP) meetings can be used for both conflict prevention and resolution due to the collaborative nature of the process and procedural tools that allow active team discussion (Mueller, 2017). Core components of the procedural aspects of FIEP meetings include: (a) pre-meeting with families, (b) establishing and following a meeting

agenda, (c) using meeting norms, (d) utilizing a parking lot for off-topic issues, and (e) visual charting for graphic support during team discussion and problem solving (Mueller & Vick, 2017). Meanwhile, collaborative components of the FIEP meeting include: (a) meaningful facilitation, (b) keeping the focus on the student, and (c) encouraging active parental participation through consensus building (Authors, in press).

Limitations and Future Research

Due to the nature and scope of this study, the results cannot be generalized to the larger population. There are two limitations worth noting. First, participants were all located within the same Midwestern state, thereby representing experiences from only one region in the US. Second, this was an investigation of parents' perceptions and experiences with transition planning only. A more thorough and valuable investigation could include students' perceptions. Nevertheless, this study contributes to the exploration of parents' perceptions related to postsecondary transition planning after their child had either exited school or was close to completion. Future research could further investigate the process by which transition goals for students with ID are identified, targeted during classroom instruction, and achieved following high school graduation. Outcomes of this type of research could provide educators with potential strategies for implementation. Other research could also examine student perceptions of the transition planning process. After all, students are the ultimate consumers of education. While the parent voice is powerful and necessary for student advocacy, the spirit of transition planning is to empower students to become involved in all educational decisions, with great emphasis placed on the development of their own voices. The strongest bridge between the present and the future should be created through utilization of the student voice.

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APPENDIX A

Interview Questions

1. What is your child's disability?

2. Is your child still in high school? If not, what year did your child graduate from high school?

3. What are/were your child's postsecondary plans as documented in his/her transition plan?

4. What is/was your level of involvement in your child's postsecondary transition plan?

5. What are/were your perceptions of your child's postsecondary transition plan?

6. Is your child currently engaging in opportunities and experiences correlating with those developed in his/her postsecondary transition plan?

7. Are you satisfied with your child's level of opportunities and experiences as a young adult?

8. If you could change any aspect of your child's postsecondary transition planning experience, what would it be?

How Early Experiences in Cognitive Development Improve Working Memory and Processing Speed Skills of Children

Heather Dube, B.A.

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Abstract

Providing the support that children need to build cognitive skills (i.e. working memory and processing speed) has come to the forefront for special educators today. This study investigated how fourth-grade students within an experimental classroom (N=14) and special education students within a small group setting (N=9) improved their working memory and processing speed through a self-designed board game. Board game activities were conducted for three months. Data were collected from 14 heterogeneously grouped students in an experimental classroom (N=22) and student within a small group setting in the special education classroom setting (N=9). The effects of working memory and processing speed interventions were administered through individual pre- and post- standardized measures. Descriptive statistics for post-test student assessments show no statistical significance in working memory and processing speed. The results of this study suggest that a short-term intervention to increase working memory and processing speed is not impactful. Longer interventions may prove to be more successful and should be examined.

Keywords: working memory, processing speed, special education

How Early Experiences in Cognitive Development Improve Working Memory and Processing Speed Skills of Children

Today's classrooms are identified as "diverse" (Volts, Sims, & Nelson, 2010, p.1). According to Volts, Simms, & Nelson (2010), "Nearly half of all students in U.S. public schools (42 percent) are students of color, approximately 20 percent of students speak a language other than English at home, and approximately 14 percent of students have an identified disability. Approximately half of the students who have an identified disability spend 80 percent of their school day in general education classrooms" (p.1). With such diversity and differences, students are expected to reach the same academic goals and standards within our classrooms today (Volts, Sims, & Nelson, 2010, p.1).

Now picture sitting in these diverse classrooms and having nothing make sense (Garner, 2007, p.1). Despite teachers utilizing research-based instructional practices and working hard to meet these diverse challenges, some students may not "get it" while others do (Garner, 2007, p.1). We try to reach the students who "do not get it" through after-school programs, remedial reading and mathematics programs, summer school, tutoring, and through small group/individual instruction in the special education setting (Garner, 2007, p.1). Many still struggle, leaving teachers and parents baffled.

Defining "student success" is one of the biggest challenges in education today. Most focus on quantifiable data such as grade point averages and standardized tests, but those only provide part of the picture, especially at the elementary level. According to Elementary Education- Current Trends (2018), "The rapid changes in cognitive, social, and moral growth of an elementary school student makes the elementary classroom an ideal setting for shaping individual attitudes and behaviors (p.2)." Numerous reforms (i.e. No Child Left Behind) have had lasting changes in elementary schooling, while others have gone away just as quickly as they came in. No matter the circumstance, elementary education is an exciting time for reform and changes, however, we continue to grapple with the necessary skills and knowledge needed for the twenty-first century. The term "intelligence" has challenged educators and researchers for many years (Lynch & Laverne, 2012, p. 347). Many influential theorists, such as Piaget, Montessori, and Froebel, have provided theoretical underpinnings that suggest children learning best as a "result of environmental factors, "sensitive periods", and developmental stages (Lynch & Laverne, 2012, p. 347). Recent research now highlights that there are many facets of intelligence, to include a "combination of genetic factors, environmental influences, and life experiences that affect learning in unique ways" (Lynch & Laverne, 2012, p. 347).

A Functional Theory of Working Memory

For the purposes of this study, working memory refers to "a complex cognitive system that is responsible for the storage and processing of information in the short term" (Sarette, 2014, p. 23). It is the ability to temporarily store and manipulate information simultaneously and is considered an important predictor for academic performance in such areas as reading and mathematics (Van de Weijer-Bergsma, Kroesbergen, Jolani, & Van Luit, 2015, p. 756). Although there are several models of working memory, the most widely known and the one that has proved most robust in the face of research evidence is that of Baddeley and Hitch (Sarette, 2014, p. 25).

This study focuses on Verbal Working Memory (i.e. the Phonological Loop) from the Baddeley and Hitch model. It is "responsible for the temporary storage of verbal information: items are held within a phonological store of limited duration, and the items are maintained within the store via the process of articulation (inner vocalization)" (Swanson, Jerman & Zheng, 2008, p. 343). According to Montgomery, Magimairaj, & O'Malley (2008), findings from their research suggest that children between the ages of six and twelve years of age use working memory potential to process and comprehend familiar complex sentence structures (p. 349). Kanerva & Kalakoski (2016) found that sixty-eight adolescents working memory span tasks play a role in predicting academic achievement, particularly with less demanding tasks (p. 688). Karpiacke, Blunt, & Smith (2016) research led to results that practicing retrieval of information can be an effective learning strategy for children with varying levels of reading comprehension and processing speed (p. 7). According to Schneider and Ornstein (2015), "brain growth increases in knowledge, strategy use, processing speed, and changes in the rate of memory trace decay, which in turn helps to contribute to developmental changes in working memory (p. 193).

A Functional Theory of Processing Speed

For the purposes of this study, processing speed is defined as "the time required to complete a cognitive, language, or motor process accurately" (Poll, Miller, Mainela-Arnold, Adams, Misra, & Park, 2013, p. 330). It is widely known that children with learning disabilities display

difficulties with processing information, to include visual-spatial processing. Braaten & Willoughby (2014) state that there are three types of Processing Speed: Visual Processing, Verbal Processing (i.e. Listening), and Motor Speed (p. 12-13). One or more areas can often lead to a deficit in areas of functioning, to include academic processing (Braaten & Willoughby, 2014, p.13-14). This research practiced and assessed visual and motor processing speed types.

The rate at which students process information has been well researched. Cepeda, Blackwell, & Munakata (2013) found that processing speed "taps in to" executive control and can impact developmental change and individual differences (p. 269). Kail and Miller (2006) studied whether processing speed in the language domain developed at the same rate as global processing speed. Results suggested that children of the age of nine and fourteen showed nine-year old's to be faster on language tasks than on nonlanguage tasks and that a child's processing speed was moderately stable over a five-year span (p. 130-135). They also suggest that speed of processing increases rapidly in childhood, more slowly in early adolescence, and reaches mature levels in mid-adolescence (p. 130-135).

Weiler, Bernstein, Bellinger, and Waber (2002) studied children with ADHD-Inattentive Type who have "sluggish cognitive tempo's (p. 448). Results suggest that children with ADHD differed from those without ADHD on visual tasks but not auditory tasks (p. 448). Slow processing rates were not a function of inattention (Weiler, Bernstein, Bellinger, & Waber, 2002, p. 448). Results found by Mayes and Calhoun (2007) support Weiler, Bernstein, Bellinger, & Waber's research in that "children with ADHD and high-functioning autism have learning, attention, graphomotor, and processing speed weaknesses" (p.482). Research conducted by Wassenburg, Hendriksen, Hurks, Feron, Keulers, Vles, & Jolles (2008) found that with regard to processing speed, improvements were noted in grade six with gradual decreases over the grades (p. 204). In summary, results did not find a plateau in performance after grade four (Wassenburg et.al, 2008, p. 204).

The Role of Working Memory and Processing Speed in the Classroom

Research on how to teach so that students will remember what they are taught has been conducted for many years. Besides numerous research conducted on students' cognitive processes while learning from teaching, Winne, Marx, & Simon (1983) suggest that students can be trained to discriminate instructional stimuli and respond with pre-arranged cognitive strategies (p.244). For example, they suggest that students can learn from teaching as presently delivered in classrooms. In addition, a fundamental assumption of cognitive psychology is that learners actively construct mental representations of their environment, rather than passively react (p. 70-80).

Learning from teaching also suggests that there are two varieties of stimuli in instruction to which learners can respond cognitively (Winne, Marx, & Simon, 1983, p. 87-88). One such model, and used within this research, includes teachers/students (and other media for presenting curriculum material) cue learners to use particular cognitive strategies in order to accomplish learning. These are instructional stimuli. To profit from instructional stimuli, learners must accomplish three cognitive tasks (Winne, Marx, & Simon, 1983, p. 87-88):

1. To perceive instructional stimuli, (i.e. notice their occurrence and understand the cognitive operations or strategies intended to facilitate learning).
2. The student must carry out the cognitive activities to create or manipulate information that should be stored in memory as a representation to be learned.
3. They must encode this instruction/prepared content for later retrieval (i.e. on a test), with efficiency.

While teachers continue to develop professional skills in delivery of instruction to improve cognition and 21st century skills within the curriculum, other methods of cognitive interventions have been developed to improve students' ability to improve working memory and processing speed. A variety of studies have demonstrated gains in cognitive ability following cognitive training interventions through other methods. One such study with students in school, explored whether a computer school-based Cogmed Working Memory Training (CWMT) program would "improve both academic and psychological aspects of school performance" (Hitchcock & Westwell, 2017, p. 147). Primary school children with the mean age of 12 (N= 148) were clustered into three groups, to include active participation, a nonadaptive version of CWMT, or no training. Results from this research identified gains on trained tasks but not on working memory or attention capacity (Hitchcock & Westwell, 2017, p. 147).

Methodology

The study investigated a heterogeneously group of fourth grade students (N=14) and small heterogeneously group special education students (N=9) improve their cognitive ability through direct training and practice in working memory and processing speed through a self-design board game. The study was based on the premise that short intervention skills and supports, monitored at a minimum of twice a week, would lead to increased working memory and processing speed potential.

Research Question: Utilizing a self-design board game for intervention purposes, students will show an increase in:

1. Working memory with respect to their ability to attend, retain needed information, retrieve facts on demand, manipulate information mentally, and recall processes or concepts.
2. Processing speed with respect to their ability to fluently and automatically perform cognitive tasks, especially when under pressure to maintain focus, attention, and concentration.

Setting

The school district where this study was conducted is located in Central New Hampshire. According to the 2010 US Census Bureau, the city's population was 15, 951, with a projected 2017 population of 16,464 (U.S Census, 2010). This study took place in one of the three elementary schools that services students Kindergarten through grade 5. The current enrollment for the school is 302 students (as well as 26 part time pre-school students) with an average teacher to student ratio of 20 to 1. Of the 302 full time students, 47 percent are male and 53 percent female. 92 percent of students are White, 1 percent Black, 5 percent Latino, and 2

percent identify themselves as multi-racial. The number of students who receive free and reduced lunch at this elementary school is 50 percent.

Participants

The fourth-grade classroom teacher within this environment is a female with six years of teaching experience. She holds a Bachelor of Science Degree in Communication Sciences and Disorders. She also holds a Master of Education Degree in Elementary Education and Special Education. Two special education teachers participated in this research project with small group instruction. One special education teacher, with six years of teaching experience, has a Bachelor of Arts in Special Education with General Special Education Certification Kindergarten through grade 8 (K-8). The second special education teacher, with five years of teaching experience, has a Bachelor of Arts in Studio Arts with General Special Education Certification (K-8). The intent to conduct research in this fourth-grade classroom was due to expressed interest by a special education teacher and school psychologist to collaborate with regular education in providing interventions within a regular classroom setting and special education setting to improve cognitive skills.

Students who participated in this study include a fourth-grade heterogeneously grouped classroom, as well as a handful of other students who receive special education services from various grade levels. Of the participants in the regular education classroom included in the study (N=22), fourteen students (ages 9-11) participated with parent consent. Ten students (53 percent) were male and nine students (47 percent) were female. Three students were identified for special education services within this classroom. Six remaining students were in small groups within the special education setting. Three students were in a small group of instruction from the fourth grade, three students from the third grade, and two students from the first grade. Of the special education students who participated, three students are identified with a Specific Learning Disability, one student with an Other Health Impairment, two students with an Intellectual Disability, one student with Autism, and one with a Developmental Delay. Of these special education students, one student is medically diagnosed with Cerebral Palsy, another with a Hearing Impairment, and a third with Attention Deficit Hyperactivity Disorder (ADHD).

Consent

The Principal and building Special Education Administration of the research site interviewed the researcher(s). Once initial permission was granted, the researchers proceeded to the Superintendent, Assistant Superintendent, and the School Board. Once permission was formally granted, the study was conducted from March to May 2018. Participation was voluntary. Proceeding School Board approval, parental consent was obtained January-February 2018 through a parent letter. Within the regular classroom setting, three parents did not give consent for their child to participate in the study. Within the special education setting, six parents did not give consent for their child to participate in the study. Therefore, it was explained to those parents that no data would be collected however their child would still learn the strategies and skills taught as part of the game board instruction.

Independent Variable

The researchers began role-modeling game board directions/instructions at the end of February 2018. Within the experimental classroom twice a week, the intervention was to be played in small groups of two to four within the intervention time allotted (e.g. fifteen minutes)

For this study, the researchers developed a board game titled "Zip Zap Zoinks". Multiple game plays were discussed and created, though only one was used for the purpose of this study. The spaces were labeled "Zip", "Zap", or "Zoinks" with a few spaces labeled "Move Ahead 1 Space" or "Move Back 2 Spaces". The final space before the finish was labeled "Zoinks". The spaces labeled "Zip", "Zap" and "Zoinks" correlated with a skill card for either working memory or processing speed. The participant would begin on the first space, choosing the card that matched the space he/she was on. Once the task was completed accurately, the participant would roll two dice. He/She would move the number of spaces indicated on the dice and on his/her next turn, the participant would choose the card correlating to the new space.

"Zip" cards initiated a visual motor processing speed task. Each card had a series of images, letters, or numbers on the page. These items were placed in neat rows on some cards or scattered randomly with various sizes and fonts. Directions were given to put a slash through a particular item on the card (i.e.: "Put a slash through as many animals as quickly as you can." or "Put a slash through as many numbers as quickly as you can.") Participants were given 30 seconds to complete the task. As the research continued, 30 seconds appeared to be too much time and was modified to 15 seconds.

"Zap" cards initiated a verbal working memory task. A card may have a series of words or numbers ranging from a set of three to seven. The goal of the task is to repeat back the series of words or numbers in the order they were given. The cards were split into decks depending on how many items were on the card, so that the appropriate level could be chosen for the individual participants.

"Zoinks" cards also initiated verbal working memory tasks, however these cards required multi-step actions. Cards included items such as completing 4 step directions, listening to a short story and answering questions, and recalling a specific word (i.e.: the third word) in a list of six or seven words. In order to win the game, a participant had to complete a "Zoinks" task successfully.

The teacher continued the intervention throughout the remainder of the school weeks to provide generalization of skills. The research concluded the last week of May 2018.

Dependent Variables

Dependent variables were administered by a certified school psychologist and a researcher for this study. She has over 20 years of teaching experience (PreK to college level) and seven years as a school psychologist. The Wechsler Intelligence Scale for Children–Fifth Edition (WISC–V; Wechsler, 2014) is the latest version of one of the most widely used intelligence tests for children ages 6 to 16 (Watkins & Beaujean, 2013, p. 52). The WISC–V reflects current conceptualizations of intellectual measurement articulated by Carroll, Cattell, and Horn (Canivez, Watkins, & Dombrowski, 2015, p. 975-977). Two working memory and one processing speed subtest were utilized from the WISC-V for this research. Reliability and validity for measures administered are sound.

Working Memory Assessments

Letter-Number Sequencing- Letter-Number Sequencing measures attention span, short-term auditory recall, processing speed and sequencing abilities. The task involves listening to and remembering a string of digits and letters read aloud at a speed of one per second, then recalling the information by repeating the numbers in chronological order, followed by the letters in alphabetical order. Letter- Number Sequencing is an untimed core Working Memory subtest.

Arithmetic- Arithmetic measures numerical accuracy, reasoning and mental arithmetic ability. Arithmetic is a supplemental Working Memory subtest.

Processing Speed Assessments

Cancellation- Cancellation measures visual vigilance/neglect, selective attention, and speed in processing visual information. Cancellation is a timed supplemental Processing Speed subtest.

Data Analysis

Wechsler Intelligence Scale for Children- Fifth Edition (WISC-V) measures (Letter-Number Sequencing, Arithmetic, Cancellation) were converted from a raw score to a scaled score. A scaled score on the WISC-V indicates a mean of 10 and standard deviation of 3 for the subtest. A higher scaled score shows that a participant has a stronger cognitive (e.g. working memory or processing speed) ability. Scores of 8 to 12 are considered in the average range.

Results

Grade 4 Regular Education Classroom (N=14)

For this study, it was hypothesized that cognitive interventions would improve working memory and processing speed skills in participants. The mean and standard deviation obtained from the individual participants are based on pre- and post-testing. Table 1 reports the means and standard deviations for the three subtests administered using Excel and Statistic Suites.

Table 1

Differences in Means and Standard Deviations for Pre and Post-Test Subtests

	Pre-Test (N=14)		Post-Test (N=14)	
Measurement	M	SD	M	SD
Cancellation	9.64	2.95	9.35	2.85
Letter-Number Sequencing	9.21	2.72	10.71	3.40
Arithmetic	9.14	1.74	11.07	2.21

Note. Mean Scores are displayed as scaled scores. Standard Deviation scores are displayed as percentages.

The data in Table 1 show that the means for the Letter-Number Sequencing and Arithmetic post-tests are higher than the pre-test mean.

The Cancellation t-value was 0.24 (13) with a p-value of 0.81. The difference between the pre- and post-test is not significant at the .05 level. The results of the test are in Table 2.

The Letter-Number Sequencing t-value was -1.30 (13) with a p-value of 0.21. The difference between the pre- and post-test is not significant at the .05 level. The results of the test are in Table 2.

The Arithmetic t-value was -3.20 (13) with a p-value of 0.01. The difference between the pre- and post-test is significant at the .05 level. The results of the test are in Table 2.

Table 2
Independent Small-Sample Hypothesis Tests for Cognitive Testing

Subtest	t value	df	p value*
Cancellation	0.24	13	.81
Letter-Number Sequencing	-1.30	13	.21
Arithmetic	-3.20	13	.01

Note. Scores are displayed as percentages. *p <0.05, two-tailed.

Special Education Students (N=9)
For this study, it was hypothesized that cognitive interventions would improve working memory and processing speed skills in participants. The mean and standard deviation obtained from the individual participants are based on pre- and post-testing. Table 3 reports the means and standard deviations for the three subtests administered using Excel and Statistic Suites.

Table 3
Differences in Means and Standard Deviations for Pre and Post-Test Subtests

	Pre-Test (N=9)		Post-Test (N=9)	
Measurement	M	SD	M	SD
Cancellation	9.90	2.49	9.00	1.73
Letter-Number Sequencing	5.44	2.19	4.33	1.95
Arithmetic	5.11	1.23	6.33	1.74

Note. Mean Scores are displayed as scaled scores. Standard Deviation scores are displayed as percentages.

The data in Table 3 show that the means for the Arithmetic post-tests are higher than the pre-test mean.

The Cancellation t-value was .66 (8) with a p-value of 0.52. The difference between the pre- and post-test is not significant at the .05 level. The results of the test are in Table 4.

The Letter-Number Sequencing t-value was -0.87 (8) with a p-value of 0.40. The difference between the pre- and post-test is not significant at the .05 level. The results of the test are in Table 4.

The Arithmetic t-value was -1.40 (8) with a p-value of 0.18. The difference between the pre- and post-test is not significant at the .05 level. The results of the test are in Table 4.

Table 4
Independent Small-Sample Hypothesis Tests for Cognitive Testing

Subtest	t value	df	p value*
Cancellation	0.66	8	.52
Letter-Number Sequencing	-0.87	8	.40
Arithmetic	-1.40	8	.10

Note. Scores are displayed as percentages. *p <0.05, two-tailed.

Discussion

While we work on 21st Century skills within the classroom setting, educators must have an understanding of the constructs of attention, memory, and executive function, "all of which is critical to our understanding of human cognition and learning" (Lyon & Krasnegor, 1996, p. 1). Learning is dependent on the ability to pay attention to the environment; retain and retrieve information; and select, deploy, monitor, and control cognitive strategies to learn, remember, and think (Lyon, 1996, p. 3). Without these skills, "We cannot plan, solve problems, or use language" (Lyon, 1996, p.3) On top of this, we expect, in our culture, to do things quickly. Children who may not process information as quickly may have challenges in their thinking, appearing less intelligent in classrooms. For this study, it was hypothesized that a working memory and processing speed intervention would positively affect assessed cognitive skills. Post-test Performance Working Memory. The number of research articles accessed through regular search engines such as ERIC and Psych Info was low when comparing results. Most research has been conducted with earlier versions of the Wechsler Intelligence Scales for Children Third and Fourth Editions. What is available for cognitive results and the utilization of the WISC-V focuses on specifics of cultural and linguistic needs, such simplicity of administration, few verbal demand, and broad cross-cultural applicability. Results were positive for culturally diverse populations.

When interventions used to improve working memory were game oriented, computerized model interventions were dominant in the search engines. Van de Weijer-Bergsma, Kroesbergen, Jolani, & Van Luit (2015) research saw improvements in working memory through their online computerized and self-reliant assessment of verbal working memory in primary school children, particularly older primary children vs. younger primary children (p. 767). Results from this study are not consistent with earlier research. However, when each task was analyzed separately,

participants' abilities within the regular education classroom increased in their ability to hold and manipulate information to mathematically problem solve. This is consistent with research conducted by Swanson, Jerman & Zheng (2008) in improvements in primary aged students' problem-solving ability. Their ability to repeat rote information remained consistent. Special Education participants working memory results remained consistent.

Post-test Performance Processing Speed. The number of research articles accessed through regular search engines such as ERIC and Psych Info was low when comparing results of game interventions. Results from this study are consistent with Wassenberg et al. (2008) in that processing speed continues to develop in the elementary school years (p. 206). The current study found that game interventions resulted in consistent pre/post test scores between all participants.

Discussion of Methodological Limitations

This study has multiple limitations. First, the sample size was large enough to produce results and run the proposed analysis, but it was too small to make strong statements on the effectiveness of the interventions. The sample was also from a single grade in a school district in central New Hampshire. Although this grade was chosen specifically because of the developmental level of children ages of nine to eleven, it does not provide a wide scope of ages or developmental stages.

In designing this study, the researchers selected only one classroom due to ease of gaining permission and implementation. Due to the specific demographics of the school and the classroom, the findings can most likely be generalized to children only in the same environment. The researchers also did not consider all grade levels in the special education setting. Due to the ease of implementation, the special education setting results can most likely be generalized to children in the specific grade, setting, and disability(s).

Additionally, this study did not control for students' initial reading levels for the working memory cards. Thus, it is not clear to what extent reading and comprehension skills contributed to the present findings. The same could be said for attention or impulsivity, or emotional issues. The inability to control for these individual differences that were unrelated to the purpose of the current study may have confounded the results in several ways.

When conducting the dependent variables, the same, consistent, quiet, and safe location was not utilized for all participants. This could have resulted in some variation and inconsistencies between pre and post test scores among all participants. When administering cognitive testing such as the WISC-V, guidelines state that subtests can only be administered once a year. This is to reduce the practice effect. The WISC-V was given twice within the research period. It, therefore, has to be questioned to what extent these data can be considered admissible, despite the strong reliability and validity of the WISC-V.

Several factors could have contributed to the inconsistency or lack of cognitive growth in working memory and processing speed scores as assessed. The intervention was determined to be conducted twice a week within the regular and/or special education setting. The study was conducted during the winter season. Besides a school vacation week interfering, snow days were called (minimum of five) during the research period, resulting in no school. If the snow day was

called on the intervention day (i.e. game day), a make-up session may not have been conducted. No direct instruction on strategies (e.g. mental images, repetition of numbers/letters) was employed throughout the research, which could indicate no improvement in scores for working memory and processing speed. The classroom teacher and researchers only met once during the intervention period to discuss progress, although some positives and negatives were discussed, and addition of new and more challenging cards were administered based on this one discussion. Collaboration between regular education, special education, and the researchers were warranted and could have resulted in minimal growth noted on dependent measures.

The intervention (i.e. board game) within the regular classroom took place in small groups scattered throughout the classroom. Such a potentially noisy context might have been problematic for participants to participate fully.

This study does have a strength worth noting. Creating a board game for educators to use as an intervention through a warm-up session before direct instruction, an intervention period held during the Response to Intervention time, or through center time in a classroom, was highly regarded by special educators during a professional development session. Thoughts on improvements for the board game were sought by this group as well as the students in the regular education setting who participated in the study. This created a buy-in atmosphere to improve participation. This process helped the researchers scaffold skills in the game cards to meet developmental needs.

Implications

Elementary classrooms and small group special education settings, as described in this research, shows that interventions in cognition is important to improve learning. Future research that examines children's cognition and learning as potential mediators between the ability to pay attention to the environment; retain and retrieve information; and select, deploy, monitor, and control cognitive strategies are needed to learn, remember, and think. Further research with this age group and data collecting on academic achievement while collecting cognitive data would help inform educators of academic and behavioral gains, particularly if conducted over an academic year and possibly monitored over the course of subsequent years. The intent of the researchers is to continue this research topic and board game in the same school with another heterogeneously grouped grade four classroom in the fall of 2018 to late spring 2019.
The findings speak to the importance of teacher preparation in ways that promote working memory and processing skills while teaching. Most teacher preparation programs and professional development for certified educators offer classroom techniques that are not always tailored to children's cognitive needs or development. The present findings suggest that while teachers deliver daily instruction, they can infuse strategies and skills at an early age to at least maintain current abilities. Repetition and practice help students to make sense, meaning, and generalization of skills across the school environment(s). Re-teaching, review, and modeling of strategies is needed. This will require a commitment from teachers, students, and administrators who determine the amount of instructional time for subject areas.

Conclusion

All students need time to learn. Learning consists of reinforcing the connections in the brain called neurons. Educators can "supercharge" material to be learned by relating it to students' senses and experiences. These connections then in turn intensify their memory. The ability to complete tasks in a timely manner is highly related to a child's success in school. Students needs to learn strategies to not only improve academics, but to grow and develop socially, emotionally, and behaviorally. They need to understand how and when to implement cognitive strategies within the context of the school environment so that they experience positive development during a crucial time in their childhood. Increasing cognitive skills in children's development has shown to enhance adaptation, adjustment, and achievement throughout the life span (Lyon & Krasnegor, 1996, p. 392). The results of this study translate to effectively continuing to develop and maintain cognitive skills through the possibility of long-term intervention skills in working memory and processing speed skills among elementary students, improving the development of learning as early as possible.

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Instruction in Co-Taught Secondary Classrooms: An Exploratory Case Study in Algebra 1

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Abstract

Co-teaching is a widely-used service delivery model to support students with disabilities in accessing the general curriculum in the United States. The pairing of a special educator and general educator is meant to produce substantively different instruction than when the general educator teaches alone. Research into these instructional differences is still scarce. In this exploratory case study, we compare the instruction of a co-taught Algebra 1 Part 1 class to the instruction in an Algebra 1 Part 1 class taught by the same math educator alone in a rural high school, including grades nine through twelve. Few instructional differences were found. Implications of our findings and ideas for future research are discussed.

Keywords: algebra, co-teaching, students with disabilities

Instruction in co-taught secondary classrooms: An exploratory case study in Algebra 1

As of 2015, approximately 63% of students with disabilities received the majority of their education in general education classrooms in the United States (U. S. Department of Education, 2017). To meet the demands of these students and their continued need for special education services, many schools have turned to the co-teaching model of service delivery. Friend (2015) describes co-teaching as "educators [focusing] on integrating into daily lessons the special education strategies and techniques that will enable students to achieve the goals of their individualized education program (IEP)" (p. 18).

The idea of co-teaching is relatively simple – put two teachers in a classroom and have them teach; however, anyone who has been involved in its implementation understands its complexity. In reviews of co-teaching studies, authors report many factors affect implementation, such as teacher relationships and training, administrative support, equitable student distribution, planning time, and grade level (e.g., Friend, Cook, Hurley-Chamberlain, & Shamberger, 2010; Kloo & Zigmond, 2008; Scruggs, Mastropieri, & McDuffie, 2007; Weiss & Brigham, 2000). At the secondary level, particularly grades nine through twelve, these factors are complicated by the separation of academic departments, content area knowledge of teachers, pace of instruction, and high stakes nature of courses related to diploma requirements (Magiera, Smith, Zigmond, & Gebauer, 2005). Any of these factors can determine whether co-teaching is implemented in a way that fully utilizes the resources and expertise of two different teachers to make instruction unique or whether it is simply the same instruction with an extra pair of hands to help.

To that end, researchers have studied co-teaching in many different ways. In an early review of the research on co-teaching, Weiss and Brigham (2000) identified research that included evidence of program evaluations, teacher perceptions of roles, teacher perceptions of co-teaching, whether co-teaching included specially designed instruction, and types of observable teacher behaviors. The conclusions of the review were that, though there were many self-reports about co-teaching, there were few reports of the actual instruction that took place in co-taught classrooms. In a later synthesis of qualitative studies, Scruggs et al. (2007) reported (a) teachers generally perceived co-teaching positively; (b) there were a number of supports that were critical to its successful implementation; (c) the one-teach, one-assist model was the most frequently used; and (d) "general education teachers typically employ whole class, teacher-led instruction with little individualization, whereas special education teachers function largely as assistants in support of special education students and other students in need" (p. 411).

Substantively Different Instruction

The critical feature of co-teaching is meant to be the *substantively different* instruction delivered by two teachers to meet the needs of students with disabilities (Friend et al., 2010). Inherent in this definition is the concept of collaboration for difference. That is, comparing the instruction of a co-taught classroom to the instruction of a non co-taught classroom of the same content and level should yield differences in content delivery, organization of the classroom, strategies taught, practice opportunities, student-teacher interactions, and/or content. However, Magiera and Zigmond (2005) found no significant differences in the grouping of students for instruction, on-task behavior, whole-class content instruction, directions, or students' interactions with other students across co-taught and single teacher classes. Strogilos and Avramidis (2016) used an observational procedure similar to Magiera and Zigmond (2005) in a study conducted in Greece. Students were observed in co-taught classrooms, and then the special educators were asked to leave the classroom for observations on subsequent days. Findings indicated students with disabilities often worked alone or in small groups in both settings; they were more frequently on task and actively participating in co-taught classrooms, and total teacher-student interactions were more frequent in co-taught classrooms. Moin et al. (2009) compared their findings about the prevalence of lab activities in nine co-taught high school science classes to findings from earlier studies of general education classes. They concluded there was little difference between the settings and, if anything, instruction in the co-taught classes actually had fewer lab activities than had been reported in the other studies. Finally, in a study in high school mathematics classes, Magiera et al. (2005) found the most common role for special education co-teachers in these classrooms was monitoring student independent practice.

These results, as components of larger studies focused on students, provide a partial foundation for the study of the difference in instruction between co-taught and solo-taught classrooms. The purpose of this investigation is to provide a case study comparison of the instruction in a co-taught to a non-co-taught (solo-taught) secondary mathematics course to better understand what is happening. This line of research is critical for determining whether and how teachers are making the secondary general curriculum accessible to students with disabilities and how this might impact training and professional development efforts for teachers. Providing two licensed teachers in one classroom is a significant use of school resources; therefore, there is a continued need to expand our understanding of instruction occurring in co-taught classrooms and how it is

different or enhanced as a result of those increased resources (Solis, Vaughn, Swanson, & McCulley, 2012).

Conceptual Framework

Co-teaching is one example of collaboration in schools. Though used frequently, collaboration is difficult to define (Montiel-Overall, 2009; Wood & Gray, 1991). Definitions include varying degrees of equality of voice (Wood & Gray, 1991), dialogue and problem solving (John-Steiner, Weber, & Minnis, 1998), and a trusting relationship that builds on complementary expertise (Montiel-Overall, 2009). One commonality among definitions is in terms of outcomes. Authors describe the outcome of collaboration as change, new conceptual frameworks, and difference from what is created by a single individual. Specifically, John-Steiner et al. (1998) wrote:

> *the principals in a true collaboration represent complementary domains of expertise. As collaborators, they not only plan, decide, and act jointly, they also think together, combining independent conceptual schemes to create original frameworks. …work products reflect a blending of all participants' contributions*. (p. 776)

This definition provides several fundamental ideas related to co-teaching. First, there is the understanding that individuals with differing areas of expertise and skill are brought together to complement one another. Second, the combination of the differing areas of expertise produces a product that is different from what could be produced by any one individual involved. This difference is what makes co-teaching unique from traditional instruction with an individual teacher. As stated by Montiel-Overall (2005),

> *Through the process of working together and thinking about how to integrate individual ideas, a new understanding evolves that could not have come about through individual efforts. This is the essence of shared creation of integrated instruction, which results in the creation of a new educational experience or a learning opportunity*. (p. 5)

In co-taught instruction, these changes are meant to improve teachers' ability to effectively reach a broader spectrum of students (Pugach & Johnson, 1995).

But is this view of collaboration being realized in co-teaching? The literature has been so focused on the *process* of collaboration and co-teaching that the *differences* created by collaboration have not been thoroughly examined. The purpose of this case study is to examine instruction in a solo-taught course and its corresponding co-taught course within the conceptual framework of difference arising from thinking, planning, and acting jointly as teachers with differing areas of expertise. Given this conceptual framework, we hypothesize differences between settings would include instruction related to students' Individualized Education Programs (IEPs), content, methodology, delivery, and instructional approaches that are not required by all students (Friend, 2015).

This case study compares the instruction that took place in a co-taught Algebra 1 Part 1 class (Class CT) with that of a solo-taught Algebra 1 Part 1 class (Class S) under routine conditions in a rural high school. The research questions are:

1. What are the similarities and differences in how these secondary math and special education teachers describe their co-teaching and their instruction?
2. What are the similarities and differences in instructional actions that occur during lessons in a solo-taught and in a co-taught classroom?

Method

Setting

School. This case study took place at a rural high school in the mid-Atlantic region of the United States. According to the state department of education report card, the school met all accreditation standards when the study took place (State Department of Education, 2016). At the time, the school population was 1,251. Minority enrollment was 32%, and 29% of students participated in the free or reduced-price lunch program. Eighty-eight percent of all students passed the state performance standard in reading and 75% passed in mathematics. Ninety-four percent of students graduated with a standard or advanced studies diploma. For students with disabilities, 52% passed the state performance standard in reading, and 50% passed in mathematics. Ninety-three percent of students with disabilities graduated with a standard or advanced studies diploma. Sixty-seven percent of all students earned a Proficient score on the required Algebra 1 verification exam; 43% of students with disabilities earned Proficient.

Course and schedule. We studied two sections of a course titled Algebra 1 Part 1. The course is the first of a two-course sequence for the completion of Algebra 1 content. It is approved for students seeking standard diplomas in the state where the school is located. In this high school, courses were offered on a block schedule. Each day, students attended four classes, meeting for 90 minutes in each class. Students took four courses each semester, and the entire course curriculum was completed within a semester (approximately 18 weeks). At the time of this case study, students were in the final nine weeks of the fall semester.

Observed classrooms. We observed two Algebra 1 Part 1 classrooms. The first classroom (Class S), solo-taught by Kevin (all names are pseudonyms), a licensed math teacher, included 23 students who were in the 9th grade. A fully-certified English as a Second Language teacher served as an assistant to the general educator. This assistant did not provide instruction but would translate teacher statements to Spanish as necessary or remind students to stay on task. At the time of the study, there was no expectation for these two teachers to co-teach. The second classroom (Class CT), co-taught by a special educator (Karen) and the same general educator (Kevin) as in Class S, included 20 students who were in the 9th grade. Table 1 includes student characteristics for both classes.

Table 1
Student Characteristics and Evaluation Performance by Class

Characteristic		Class S	Class CT
Total Students		23	20
Gender	Male	13	13
	Female	10	7
Students with Disabilities	LD	0	7
	Other	0	4

English Language Learners	11	0

Participants

After a brief presentation of the proposed study to staff, the co-teaching team of Kevin and Karen volunteered to participate. Kevin taught Class S as a fully-licensed secondary mathematics teacher. He was in his 11th year of teaching and had a computer science background. He had previously worked in business and was in his 50s. He was a former basketball coach and current golf coach at the school. Kevin taught Computer Science, Algebra 1 Part 1, and algebra courses. This was the first time he had co-taught Algebra 1, Part 1 with Karen, but they had previously co-taught Algebra 1, Part 2 together.

Karen taught with Kevin in Class CT as a fully-licensed special educator and math educator. Karen was in her seventh year of teaching and was assigned to work only within the mathematics department of the high school. She co-taught with other math teachers in algebra topics and also taught one section of Algebra 1, Part 1 in a self-contained, small group setting for students with disabilities.

Kevin and Karen had been co-teaching the course for approximately four months before we began observations. Karen had received extensive training in co-teaching through a program sponsored by the State Department of Education, for which she and one of her other co-teachers had been identified as exemplary co-teachers. As a result, she had also provided professional development on co-teaching for the staff, including Kevin, at the high school.

Measures

Observation field notes. During each observation, researchers wrote general notes about the overall sequence of activities during the class session. These notes were then compiled, and specific activities were categorized by instructional events.

Classroom Teaching Scan (CT Scan). To measure the instructional practices used in each setting, researchers employed an observation instrument called the Classroom Teaching (CT) Scan (Kennedy, Rodgers, Romig, Lloyd, & Brownell, 2017). This instrument is designed to capture the specific instructional practices teachers use, kinds of student-teacher interactions, and student behavior.

At the core of the CT Scan are lists of instructional practices teachers may use in their classrooms. These lists were compiled by the instrument developers based on extensive literature reviews, personal teaching experience, and classroom observations (Kennedy, Rodgers, Gressick, Romig, & Alves, 2019). Construction of the lists was iterative, with the development team watching classroom videos using the lists and then comparing selections afterward. Through this process, codes were deleted, added, or combined to create lists that were manageable for observers to learn but comprehensive of potential practices they may see. The CT Scan also allows for more discrete data to be collected, such as number and types of questions teachers ask and feedback statements teachers provide. The rationale for adding these counts was based in literature that has shown the benefits of frequent progress monitoring and specific feedback for students (Chan, Konrad, Gonzalez, Peters, & Ressa, 2015; MacSuga-Gage

& Simonsen, 2015). In practice, the CT Scan is a software program with an interface that combines selection menus, counter buttons, and narrative fields. It includes a running timer, which time-stamps each selection the observer makes. Once an observer clicks the Start button, the timer begins, and all selections are captured until the observer clicks Stop. For continuous events, such as instructional practices and student actions, the program records duration, and for discrete events such as questions and feedback statements, it records the time the events occurred (Kennedy et al., 2019). See Table 2 for the instructional categories and associated practices we included in this study.

Table 2
Instructional Practices and Definitions

Category	Instructional Practice	Definition
General content instruction	Lecture	Presenting information verbally, with or without visual aids, and with limited student participation.
	Model task/activity	Modeling completion of task or activity to students using a think aloud.
	Facilitate student demonstration	Asking student(s) to present or demonstrate their knowledge about something.
	Review prior knowledge	Leading an activity designed specifically to review information students have previously learned.
Classroom procedures	Transition time	Monitoring students as they transition, or setting up for the next activity.
	Gives directions	Stating steps for students to follow in completing a task.
Observe/ assess students	Proctoring	Monitoring as students do independent work without interacting with students.
	Prompts/scaffolds	Assisting/ supporting student(s) who are struggling with a concept or task.
	Feedback	Gives evaluative comments to student with specific example.
	Talks to students	Talking to a student or group of students, but the observer cannot hear what is being said.
Not teaching	Not teaching	Engaging in a non-instructional activity.

Interviews. Following completion of our observations, Kevin and Karen responded individually to a set of open-ended questions via email and in person. The questions were: (a) How many times have you co-taught Algebra 1, Part 1 together? Have you co-taught any other math courses together? (b) What were your goals for co-teaching in Class CT? (c) What do you see as the major differences in the solo-taught and co-taught classes? (d) In general, what do you two talk about when you discuss Class CT? (e) What are your ideas about feedback and support to

students in either or both of your classes? Follow-up questions for clarification were asked as needed. Interviews were transcribed for analysis.

Procedures

Observations took place in both Class S and Class CT on the same days for the duration of each 90-minute block period. Classes met every day, so we conducted observations for seven consecutive school days, covering approximately 20 hours of instruction. The CT Scan was used during each coding session by the authors. Both had been trained to use the CT Scan and had experience using it in classrooms. For 20% of the total observed minutes, both authors observed and coded in the same classroom. Reliability was determined in several steps. First, observation data outputs were split into 30-second intervals and compared. Overlap of the broad instructional category was calculated by counting the number of intervals of agreement, dividing by the total number of intervals and multiplying by 100. Overall inter-rater reliability was determined by averaging the reliability in each observation and was an acceptable 83% (Graham, Milanowski, & Miller, 2012).

For research question one, we compared interview responses from both teachers question by question and identified similarities and differences. In addition, we compared field notes for the different classrooms taken during observations, categorizing similarities and differences by themes. For research question two, output files from the CT Scan were examined with a compare tool that divided them into 30-second intervals. The observations were then grouped by broad instructional category and instructional practice. The percent of total intervals for each general category was then calculated. The average percent of time spent in each instructional category for Class S was calculated and compared to the same percentage for Class CT using a two-tailed independent samples *t*-test. In addition, we used field notes to describe typical instruction across lessons.

Results

Views of Co-teaching and Instruction

To answer the first research question, we interviewed the teachers and asked them to describe their co-teaching ideas and process. Kevin and Karen did not have a common planning time, so they did most of their planning for Class CT through email. According to Karen, "We used the pacing guide as an umbrella. I acted as the scheduler." They divided the class into thirds, consisting of a warm up, notes, and then an activity (the course structure and content are described in more detail below).

Goals. In terms of goals, Karen stated her goal for co-teaching was for the students to pass the state competency test at the end of the course so they could move on. Kevin said he did not have specific co-teaching goals; rather, "I just want to help the students believe in themselves so they can perform to their maximum potential and support and learn from my co-teaching partner. It's about a team and helping everyone to succeed." Karen was excited when she learned she would be teaching with Kevin because he was a man "who commanded respect" and "was so open to other ideas." Karen indicated Kevin was good at classroom management and getting students' attention.

Differences. When asked what the major differences were between the two classes, Kevin stated they were very different. In Class S, nearly half of the students were learning English. This made him slow down in his delivery of new content, but asking constantly if the students understand, them saying yes even though they really didn't, was challenging to say the least. However, they were a very respectful class so by the end of the year I was able to do more with them than with [Class CT].

Kevin went on to say that Class CT was one of the most challenging he ever had in terms of behavior management and lack of motivation. He and Karen would spend a great deal of time after class talking about how to help students and "what can we do to make the dynamic better. Also, for individual students, what can we do to reach them as people? What are our personal strengths that might more closely align with the students so we can connect…."

Feedback. Finally, we asked Karen and Kevin to talk about how they provided feedback and support. Karen used independent practice and formative assessment to gather data about student performance. She used paper and pencil for concrete feedback and asked students to write more "to see what's going on in their heads." She stated that she used modeling and think-alouds frequently in her instruction. Kevin believed he did not use much of a different approach between the two classes. He tailored his communication to the personality of the class and the individual student, emphasizing my big picture item that I am trying to get across is responsibility. That they must take responsibility for their learning and I am here to support them but they must make the effort to help themselves. They are adults and not children anymore. For Kevin, feedback and support came in the form of giving opportunities for questions and feedback, providing students with breaks so that he could interact with specific individuals, and rewarding students when they asked questions. He believed by providing these opportunities and positive encouragement, students would attempt to do math on their own even if some would fail in their attempts. He stated, "Sometimes failure is the best teacher for some students. We as adults must be willing to let some students learn that so they can move forward."

It was interesting to note that both Kevin and Karen spoke of the students first, not teaching together during our discussion of co-teaching. They were both focused on helping the students be successful. However, they were different in that Karen believed independent practice and individual assessment assisted her in understanding individual student mastery, but Kevin wanted the students to be more active in determining their own understanding. Although Karen focused on students passing the state assessment, Kevin focused on getting the students to develop confidence and self-determination. Finally, Karen did not discuss behavior management issues in the co-taught course, but Kevin felt it was a major concern.

The teachers gave two quizzes during the time of our observations, and they administered the final exam for the course immediately after our observations concluded. Kevin shared these results to supplement his interview responses. Table 3 presents scores on these assessments for both classes.

Table 3
Average Assessment Scores for Both Classes

Characteristic	Class S	Class CT
Slope quiz	54.6%	68.1%
Direct Variation quiz	56.9%	69.3%
Final exam	62.5%	65.2%

Instructional Practices in the Two Classrooms

For research question two -- what instructional actions occur in these classrooms and are they similar or different -- we examined the instructional categories by 30-second intervals across classrooms and observations. To put the practices within context, the lesson topics for both classes on each day of observation are presented in Table 4.

Table 4
Type of Lesson and Topics Taught

Date	Class	Lesson Type	Topic(s)
12/2	Class S	N	Graphing line given equation (use calculator and not)
	Class CT	N	Slope intercept form
12/3	Class S	R/E	Review; slope quiz
	Class CT	R/N	Review; equation of line review; x and y intercepts introduction
12/4	Class S	E	Quiz on slope, direct variation, inverse variation
	Class CT	R/E/N	Review; quiz on slope, equation of line; lesson on x and y intercepts
12/7	Class S	R/A	Equation of line review and application
	Class CT	A/N	Finding x and y intercepts; line of best fit
12/8	Class S	N	Slope intercept form
	Class CT	R/E	Review; quiz on slope, equation of line, x and y intercept
12/10	Class S	A	Changing given equations into slope intercept form
	Class CT	A	Line of best fit activity
12/11	Class S	A	Writing equation of line given different parts
	Class CT	R/E	Review; quiz on line of best fit

Note: N=new material, R=Review, E=evaluate, and A=application

For both classes, the four general instructional categories presented in Table 2 covered 99% of the intervals. General content instruction typically included teacher-directed instruction in new content or review of previous content. Classroom procedures included directives or actions related to getting tasks accomplished or beginning lessons. Observing/assessing students occurred when students were working on tasks independently. Not teaching was used whenever teachers were not directly involved in instruction or interactions with students (e.g., sitting at his/her desk while the students completed a test or quiz). Table 5 shows the mean percent of intervals for each category across observations in both classrooms. The only variable to be

significantly different between classrooms was classroom procedures, which represented a higher average percent in Class S than in Class CT (see Table 5).

Table 5
Mean Percent of Intervals in which Instructional Categories Occurred

Instructional Category	Mean % of intervals Class S (SD)	Mean % of intervals Class CT (SD)	t(6)
General content instruction	25.43 (10.64)	29.29 (14.8)	0.586
Classroom procedures	18.71 (5.53)	13 (3.92)	0.045*
Observe/assess students	37.86 (13.15)	36.57 (10.69)	0.844
Not teaching	18.5 (16.29)	20.8 (18.81)	0.811

* $p<.05$

We also coded the occurrence of specific instructional practices within broad instructional categories. For example, within general content instruction, practices such as lecture, model task/activity, facilitate student demonstration, and review prior knowledge are available codes. It is within these more specific practices that we found descriptive differences between classrooms. For example, across the seven class sessions we observed, Kevin used a lecture on six of seven occasions and facilitated student demonstration on four of seven occasions in Class S whereas Kevin and Karen utilized lecture on only four of seven occasions and facilitated student demonstration on only two of seven occasions. With the exception of feedback, the occurrences of other actions were identical (see Table 6).

Table 6
Instances of Instructional Practices across Seven Observations

General Category	Instructional Practice	Class S	Class CT
General Content Instruction	Lecture	6	4
	Models task	7	6
	Reviews prior knowledge	5	5
	Discussion	2	1
	Facilitates student demonstration	4	2
Class Procedures	Gives instruction	7	7
	Transition time	7	7
Observing/assessing Students	Proctoring	6	6
	Prompts/scaffolds	7	7
	Feedback	6	4
	Talks to students (misc)	4	4

Not Teaching	7	7

There were some differences, but time allotment was similar across the two settings. Field notes did indicate that Kevin encouraged and facilitated dialogue and student interaction during independent practice by having students work together to accomplish the tasks. Students actively discussed the math algorithms and options for solving problems, and they frequently asked each other questions. Independent practice in the co-taught classroom, on the other hand, did not include student to student interaction at all. Students worked independently and when they had a question, they waited for a teacher to respond. Kevin also presented clear goals for independent practice (e.g., number of problems) in his solo-taught class, and did not in the co-taught classroom. In this class, directions for students were to begin work, and Karen focused more on personally monitoring students' work to identify their strengths and areas of need.

Typical Instructional Day in Each Classroom

We used qualitative field notes from the CT Scan observations to answer research question two about what a typical instructional sequence looked like in Class S and Class CT. In Class S, Kevin usually began with an anticipatory set or an introduction to the activity for the day, sometimes accompanied by feedback from previous work. Then, four activities often occurred but not necessarily in a prescribed order. The first common activity would be to have students go up to the board to work out problems, presenting their thinking process to the class. A second common activity was Kevin lecturing about a new topic while students took notes. Third, Kevin often talked to his students about the importance of motivation and hard work. Finally, students would work on practice problems from a workbook. This final activity, independent practice, was one area of significant difference between the two classes. In Class S, Kevin provided a clear goal for their independent work, and students worked on the problems in pairs or small groups. There was extensive discourse between students about the problems and about ways to solve them. Students brought their work to Kevin when they were finished so he could check it and provide feedback. If they demonstrated understanding, he usually directed them to assist someone else. If they did not demonstrate understanding, he sent them to a student who had mastered the concept or he would reteach it himself and assign more practice problems to the student. Kevin awarded points for student participation with their partners, for helping others, for following directions, for completing work, and for demonstrating problems for the class. When given the opportunity to earn points, virtually every student would attempt to participate. Kevin included application activities in his lessons frequently, and this was the opportunity for students to work in small groups, try problems, and seek feedback.

In Class CT, Karen and Kevin used the one teach, one assist model of co-teaching in every class session observed. For all but a very small amount of our observational time, Karen was the one teaching and Kevin was the one assisting. Each day began with a warm up posted on the board. Students were directed to come in, sit down, and begin working independently on it. Karen then went over the warm up, demonstrating its solution on the board. There was a short lesson on the topic of the day that included a reference and review of previously learned material related to the new task. Then, Karen would give the students an assignment, usually a page in the workbook or a worksheet. Students would work independently while Karen and/or Kevin circulated around the room, answering student questions or giving feedback. Karen often told the students they

could work together, but few ever chose to do this. No point system existed in this classroom. As Karen stated in her interview, she used assessment as a way to determine student understanding. Therefore, four of the lessons we saw were designated as having a Review objective, and three of these included an evaluation of some type (e.g., quiz, test, independent work sample).

Students in both classes took the same slope and direct variation quizzes, as well as the same final course exam (see Table 3). Interestingly, in Class S, students' average percent correct increased from the slope to direct variation quiz and was higher than both quizzes on the final exam. Though the average percent correct on the quizzes in Class CT increased slightly, the average percent correct on the final exam grade was lower than the quiz grades. However, neither class average final exam grade indicated mastery of content.

Discussion

Algebra is a critical graduation requirement and, in recent state reports, only 29% of students with disabilities at this school passed the Algebra standard (State Department of Education, 2016). In this case study, our research aim was to find similarities and differences in the instruction provided in a solo-taught secondary mathematics classroom and a co-taught secondary mathematics classroom, specifically Algebra 1 Part 1, in a rural high school. The same general educator taught in both classrooms. We observed a total of approximately 20 hours of classroom instruction across both classes. Our hypothesis was that there would be evidence of difference in instruction between the two classrooms.

Several findings were precisely in line with what past observation studies of co-teaching have shown (e.g., Fenty & McDuffie-Landrum, 2011; Harbort et al., 2007; Moin, Magiera, & Zigmond, 2009; Rice & Zigmond, 2000). For example, the predominant model of co-teaching employed in Class CT was one-teach-one-assist, and, except for time spent in independent practice, instruction was delivered in a whole-group format. Unlike previous research, the special educator was the primary instructor in Class CT, not the general educator. This may have been because Karen was certified to teach math as well as special education, so she was comfortable with the content. This is not common among special education teachers, who often do not have extensive content-area training. Having the special educator as the main instructor provided a unique situation in which to examine differences between the two settings. Given the emphasis in special education research literature on explicit instruction (e.g., Gersten et al., 2009), it might be assumed that more time would have been spent on activities such as modeling and guided practice in Class CT, but this did not seem to be the case with these two teachers. One might hypothesize greater instructional difference because the classes were essentially taught by different teachers; however, when examining the data on a broad level, few differences were readily apparent.

Teacher-driven, whole group instruction and independent practice were approximately equal in both settings. There were more subtle differences in the ways in which the teachers implemented the broad types of instruction, however. Kevin tended to use lecture and to facilitate student presentations more often than Karen and Kevin did together. In the co-taught classroom, the majority of time in whole group was spent on direct instruction and independent practice then involved teachers moving from student to student to assist or reteach. Our hypothesis as to why

this was happening related to Karen's thought that the best way to determine if students were understanding the content was to actually get them to work problems in a traditional paper and pencil way individually. This is definitely an area of further inquiry, particularly given the reliance on whole group instruction in secondary classrooms.

In short, we did not see evidence of true collaboration in this co-teaching team, despite their prior experience working together. They did not plan, decide, or act jointly. Although they brought different expertise to their partnership, with Kevin understanding math instruction and Karen having understandings of evidence-based special education practices along with knowledge of math instruction, they did not blend these areas to create new understandings or instructional systems. For example, although Kevin exceled at facilitating student-centered dialogue around mathematics, a known evidence-based mathematics practice (Walkowiak, Berry, Meyer, Rimm-Kaufman, & Ottmar, 2014), because he and Karen did not collaborate on planning or implementing instruction, they did not capitalize on this strength in Class CT.

Limitations

This was a case study of one teaching pair who volunteered to participate in a study of their co-teaching practices. The teachers were at a beginning stage of co-teaching, having co-taught together for one semester but not having co-taught this specific course. Their situation was not ideal in that they did not have common planning time; however, they did volunteer to co-teach and they both had backgrounds in the content area. Our observations were limited to a single math course, chosen because passing an algebra course is a requirement for graduation in this state. We compared instruction in a singly-taught classroom with that of a co-taught classroom. However, the singly-taught classroom included an assistant and several students who were English Language Learners, unlike the co-taught classroom, so comparisons should be interpreted cautiously. Even with these limitations, our findings are similar to those who have compared co-taught and solo-taught classrooms in other ways. Our case study is unique in that the special educator was providing the bulk of the instruction in the co-taught classroom. However, that instruction was similar to the instruction in a solo-taught classroom in that it relied heavily upon whole group instruction and independent practice.

Research and Practice Implications

This case study describes two Algebra 1, Part 1 classes, one singly taught and the other co-taught by the same math teacher and a special educator. Both teachers focused on student success and spoke positively about co-teaching. However, we did not see the critical differences in instructional practices or individualization we expected. In addition, we found the teachers did not articulate these differences when asked. Given the literature's focus on relationships, roles, and models of co-teaching, we suggest further study of co-teaching include examining what teachers believe *should* be different between classrooms. In addition to being critical for teachers and instruction, it is important to identify and clearly define these differences in instruction so teachers can meet the unique needs of students with disabilities and ensure that co-teaching is an effective use of resources.

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The Effects of Relationship History on Student Responding in an Academic Setting

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Abstract

Rapport between educators and students has been suggested as an important factor contributing to an effective educational setting. Rapport can be difficult to measure due to idiosyncratic characteristics; however, challenging behavior exhibited by an individual has been used to determine whether two individuals share a quality relationship. Although practitioners are frequently encouraged to established rapport to maximize educational benefit with students, there is no consensus regarding specific activities and duration associated with rapport-building other than the establishment of rapport requires some passage of time. Currently there is a lack of research comparing behaviors exhibited by an individual in the presence of an instructor with a prior relationship history and in the presence of an instructor with no history. This study compared the rate of correct responding and challenging behavior emitted by participants in the presence of an instructor in which they had previously worked and a second instructor with whom they had no previous interaction. Results indicate no marked differences in patterns of responding between the two therapists.

Keywords: rapport, pairing, pre-session pairing, relationship quality, autism

The Effects of Relationship History on Student Responding in an Academic Setting

Rapport is a construct that has been conceptualized as the relationship quality between a student and instructor (McLaughlin & Carr, 2005), yet there is limited clarity in operationally defining the construct of rapport. Within the context of clinical and counseling psychology, rapport is often conceptualized as the instructor being likable or empathetic (Aronson, 1984; Roberts & Bouchard, 1989). Similarly, within the context of education, rapport is often considered to exist if the student indicates happiness through behaviors such as laughing or smiling when interacting with the instructor (Favell, Realon, & Sutton, 1996; Green & Reid, 1996). Conceptualizing rapport as an operational construct has proven to be a difficult task, given the various idiosyncratic characteristics that are present when considering the relationship quality between two individuals (Altman, 1990; Nosik & Carr, 2015; Tickle-Degnen & Rosenthal, 1990).

Likely resulting from the lack of a widely-accepted operational definition, systems to measure the existence or quality of rapport between a student and instructor vary greatly. Among the most common approaches to identify or evaluate the quality of rapport include (a) indirect measures such as measurement scales or questionnaires (b) measuring indices of happiness, and (c) measuring targeted behaviors during student and instructor interactions. Hostyn and colleagues (2011) utilized measurement scales from the parent-infant research to evaluate affective and reciprocal interactions with others for individuals with profound intellectual and multiple

disabilities. The Emotional Availability Scales (Biringen et al., 1998), Maternal/Child Behavior Rating Scales (Mahoney, 1992), and the Revised Erickson Scales (Egeland et al., 1990) were used to assess videos of interactions between staff and clients at a residential facility. The results indicated high interobserver agreement and identified that client and staff interactive behaviors were highly related (Hostyn et al., 2011). These results support the need for future research utilizing these specific measurement tools to evaluate the relationship quality among individuals with intellectual and developmental disabilities and those they interact with on a consistent basis. Green and Reid (1996) measured indices of happiness among individuals with profound disabilities. After operationalizing behavioral indicators of happiness as, "any facial expression or vocalization typically considered to be an indicator of happiness among people without disabilities such as smiling, laughing, and yelling while smiling" (Green & Reid, 1996, p. 69), they attempted to measure and increase these indicators. They found that indices of happiness increased when participants were provided with their most preferred stimuli or activities when compared to their least preferred stimuli. Additionally, behavioral indicators of unhappiness, defined as "any facial expression or vocalization typically considered to be an indicator of unhappiness among people without disabilities such as frowning, grimacing, crying, and yelling without smiling," (Green & Reid, 1996, p. 69), increased when participants were provided with their least preferred items compared to their most preferred items. Finally, ratings of participant happiness completed by practitioners correlated with the observed indices displayed by participants. After operationalizing and producing consistent measures of indices of happiness among participants, the experimenters examined whether indices could be increased by providing access to preferred items and activities. The authors also measured whether any indicators of unhappiness would decrease if the item or activity that was present at the time the indicator was observed was removed (Green and Reid, 1996). More research on indices of happiness has since identified that indices of happiness can be measured in the presence of other individuals to measure rapport (Lancioni, Singh, O'Reilly, Oliva, & Basili, 2005). The final approach to measuring rapport involves measuring the frequency of problem behavior, compliance with instruction, and orientation towards task as reflective of the presence or quality of rapport between the student and instructor (Kelly, Axe, Allen, & Maguire, 2015). As expected, low rates of problem behaviors, and high rates of compliance and task completion are interpreted to reflect high quality rapport. Such behaviors contribute to an ideal academic setting; however, there is limited evidence that asserts such behaviors are indicative of the existence of rapport between student and instructor (Lugo et al, 2017; McLaughlin & Carr, 2005).

Despite the fact that the construct lacks a clear operational definition or consistent measurement approaches, the importance of rapport within educational settings, has long been stressed in the literature (e.g., Cornier & Hackney, 1987). Moreover, to further complicate the practical implications of rapport-building between student and instructor, evidence-based guidelines on how to establish rapport, or how long that process might take, are lacking. However, one generally-accepted notion is that establishing rapport requires some passage of time, but there is a lack of consensus regarding the activities that take place during this passage of time.

One of the more common approaches to establishing rapport involves a person's exposure to another individual who is repeatedly paired with preferred stimuli, a process often referred to as *pairing* (Altman, 1990; Kelly et al, 2015; LaFrance, 1990; Lugo et al, 2017; McLaughlin & Carr, 2005; Nosik & Carr, 2015; Patterson, 1990l; Tickle-Degnen & Rosenthal, 1990). Pairing consists

of associating an instructor or instructional setting with preferred items or activities prior to introducing any seemingly aversive activities (such as academic demands) into the environment, to increase the possibility of compliance and preference for the paired environment or individual and alleviate the likelihood of problem behavior (Kelly et al, 2015).

McLaughlin and Carr (2005) examined the effectiveness of a treatment package to establish rapport between community program staff and their adult clients with developmental disabilities. The treatment package involved a pairing procedure in which staff provided clients with noncontingent access to reinforcers, among other treatment components. Although the results indicated the multicomponent treatment packaged resulted in decreased problem behavior and increased task completion, it is impossible to isolate the effects of the pairing procedure on changes in the clients' targeted behaviors.

Despite the lack of research validating the pairing procedure or any other procedures utilized to establish rapport, the implementation of rapport-building approaches is common among practitioners. Barbera and Rasmussen (2007) recommend that initial instruction begin with the instructor pairing their presence with reinforcing stimuli to build rapport and after several sessions, gradually introducing work tasks. Similarly, many instructors who work with children with ASD engage in rapport building prior to presenting any demands, due to the assumption that establishing good rapport is necessary to enhance instructional outcomes (Barbera & Rasmussen, 2007; Sundberg, 2008). Additionally, some researchers spend time building rapport with participants prior to implementing intervention (Camoes-Costa, Erjavec, & Horne, 2011; Carr, 2007; Erjavec & Horne, 2008; Hostyn et al., 2011; Taylor & Fisher, 2010).

Regardless of the specific approaches educators may take to establish rapport with students, it seems that at the very least each approach requires some passage of time to develop a history between instructor and student. In other words, the general assumption is students will respond better to familiar instructors as opposed to unfamiliar instructors, assuming the familiar instructors have had some positive interactions during that passage of time. At best, time dedicated to pairing or other rapport-building activities may promote the effectiveness of teaching strategies, but even if successful, these approaches delay access to instruction. Time devoted to academic instruction is valuable. Thus, initial interactions between students and teachers should be set up to promote development of successful educational interactions, but also ensure that students are not losing access to academic instruction. To date, there is no research indicating the number of sessions, or a specific duration, required to promote successful educational experiences. In fact, no studies have examined whether any a child would respond differently in the presence of an instructor with a previous history of being paired with preferred stimuli and an instructor with no such history.

The current study sought to determine whether a relationship history alone had an effect on the rate of correct responding and the amount of challenging behavior exhibited by a student with developmental disabilities. Using a single-case, alternating treatment design, correct responding and challenging behavior exhibited by the student were measured during academic tasks completed with a familiar instructor who had a prior history with the student and an unfamiliar instructor who had no previous interactions with the student to determine whether responding on these two measures differed.

Method

Participants and Setting

Participants consisted of four students, as well as four familiar instructors and four unfamiliar instructors. Four male children diagnosed with autism spectrum disorder by an independent agency served as the students. Table 1 describes demographic information of these participants. Both familiar and unfamiliar instructors were graduate students in an educational psychology program. As part of their graduate training, they participated in a field experience that involved creating and implementing behavioral and academic skill building plans for children diagnosed with developmental disabilities who attended a university-affiliated clinic. Each of the four familiar instructors created and implemented these plans for one of the students in this study. At the start of the study, the familiar instructors had worked with the student in a one-to-one format for up to 6 hours per week for at least six months. Students shared a history with the familiar therapists that included access to preferred items, structured academic sessions involving the use of token economies, visual schedules, or similar tools, and engagement in preferred social interactions with the therapists. The unfamiliar instructors had no previous interaction with the student prior to the study.

All sessions were conducted at the university-affiliated clinic. Sessions were conducted in individual rooms in the clinic that contained a table and two or three chairs. Experiment-specific items such as work tasks and preferred items were brought into the room for each session. Two or three experimenters were present in the room during each session to implement the procedures and collect data.

Table 1
Participant Characteristics

Name	Age	Diagnosis	Gender	Task	Challenging Behavior
Derrick	6	ASD*	Male	Gross motor imitation	Noncompliance (out-of-seat, elopement, property destruction)
Sam	6	ASD	Male	Intraverbal responding	Noncompliance (yelling "no" at a volume louder than speaking volume)
Robert	9	ASD	Male	Responding to WH questions	SIB*, verbal aggression
Jackson	3	ASD	Male	Match-to-sample	Noncompliance (sliding out of seat, rolling matching objects on table instead of matching, saying "no")

Note: Demographic information of individuals who participated in the study.

*ASD = Autism Spectrum Disorder; SIB = Self-injurious behavior

Design

A single subject, alternating treatments design (Sindelar, Rosenberg, & Wilson, 1985) was used to compare the effects of the familiar and unfamiliar instructors on challenging behavior and correct responding exhibited by the students.

Measurement

Dependent measures were the number of correct responses emitted by participants. Data on challenging behavior was also collected to determine the percentage of intervals students engaged in challenging behavior in the presence of the familiar and unfamiliar instructors.

Data were recorded through direct observation by graduate students who had been trained on the procedures. Training consisted of teaching the data collectors the operational definition of target behavior for each participant; examples and non-examples of target behavior were provided. Finally, a role play activity was conducted for data collectors to demonstrate the ability to collect data with 90% interobserver agreement across 2 consecutive observations.

A frequency count of correct and incorrect responses was used to calculate percentage of trials with correct responding. Percentage of correct responding was calculated by dividing the total number of correct responses by the total number of trials and multiplying by 100%. A 10-s

partial interval recording system was used to measure challenging behavior (Kennedy, 2005). The number of intervals in which challenging behavior occurred was divided by the total number of intervals to generate a percentage of intervals the participant engaged in challenging behavior per session.

Interobserver Agreement and Treatment Fidelity

Interobserver agreement (IOA) was collected on correct responding and challenging behavior. At least two observers independently collected data on correct responding and challenging behavior for 41% of sessions. Interobserver agreement for correct responding was calculated by dividing the smaller number of total occurrences by the larger number of total occurrences and multiplying the quotient by 100%. Interobserver agreement for challenging behavior was calculated by dividing the number of intervals in which observers agreed by the total number of intervals and converting to a percentage.

Treatment fidelity was also collected on experimenter behavior for 41% of sessions. Data collectors collected treatment fidelity data using a checklist containing each step in the procedures to measure the accuracy of the two instructors' performance during comparison sessions.

Procedures

Pre-experimental procedures. Prior to the start of sessions, a task from each participant's academic and skill building treatment plan was selected as the task to use during all sessions. The selected task for each participant was still in an acquisition phase and was not one the student consistently completed without error. Error correction procedures and prompting procedures were described for each task and the instructors were provided with this information prior to their first sessions. Tasks selected for each participant are included in Table 1. To identify the three highest preferred stimuli to use as reinforcement during the study, a paired choice preference assessment was conducted prior to the start of sessions (Fisher et al., 1992).

Experimental procedures. The familiar instructor and unfamiliar instructor conducted sessions in an alternating fashion with the student. The instructor entered the room, instructed the student to sit down at the table, then presented a vocal direction to begin the task; each session consisted of 10 trials. If the participant responded incorrectly, the instructor used error correction procedures defined in the academic plan provided. Preferred stimuli were delivered contingent upon correct and independent responses intermittently, after every second or third correct response. If a student made an incorrect response the error correction procedures were used, but no consequences were delivered. Sessions continued until a stable trend was established across four consecutive sessions with each instructor, or until at least four data points were obtained in each condition. If the student displayed challenging behavior, the instructor either blocked the behavior (Robert), or ignored the behavior and followed the error correction or prompting procedures in the student's academic plan (Derrick, Sam, and Jackson).

Results

Figure 1 displays correct responding for all participants. Derrick emitted an average of 68% (range 37% -92%) and 70% (range 40%-92%) correct responses with his familiar therapist and

unfamiliar therapist, respectively. Sam emitted an average of 74% (range 45%-87%) correct responding in the presence of his familiar therapist and an average of 73% (range 55%-94%) with the unfamiliar therapist. Robert responded with an average rate of 77%% (range 16%-100%) correct responses with the familiar therapist compared with an average of 55% (range 14%-100%) correct responses with the unfamiliar therapist. Finally, Jackson emitted comparable rates of correct responding with an average of 65% (range 0%-100%) in the presence of his familiar therapist and 55% (range 0%-80%) with the unfamiliar therapist.

Figure 2 displays challenging behavior exhibited by all participants. Derrick's challenging behavior was 70% (range 37%-92%) with the unfamiliar instructor, while challenging behavior emitted in the presence of the familiar instructor was 68% (range 37%-92%). Sam exhibited no challenging behavior with the unfamiliar instructor and minimal amounts with the familiar instructor at an average of 11% (range 0%-44%). Robert engaged in zero rates of challenging behavior with his familiar instructor, but exhibited increasing levels of challenging behavior with the unfamiliar instructor with an average of 48% (range 0% - 83%). Jackson's displayed challenging behavior on average 17% (range 0%-75%) of the intervals with the familiar therapist and 19% (range 0%-50%) of intervals with the unfamiliar therapist.

Interobserver agreement and treatment fidelity. IOA was 100% for correct responding and 98% for challenging behavior. Treatment fidelity was 100% for the familiar instructor and 99% for the unfamiliar instructor.

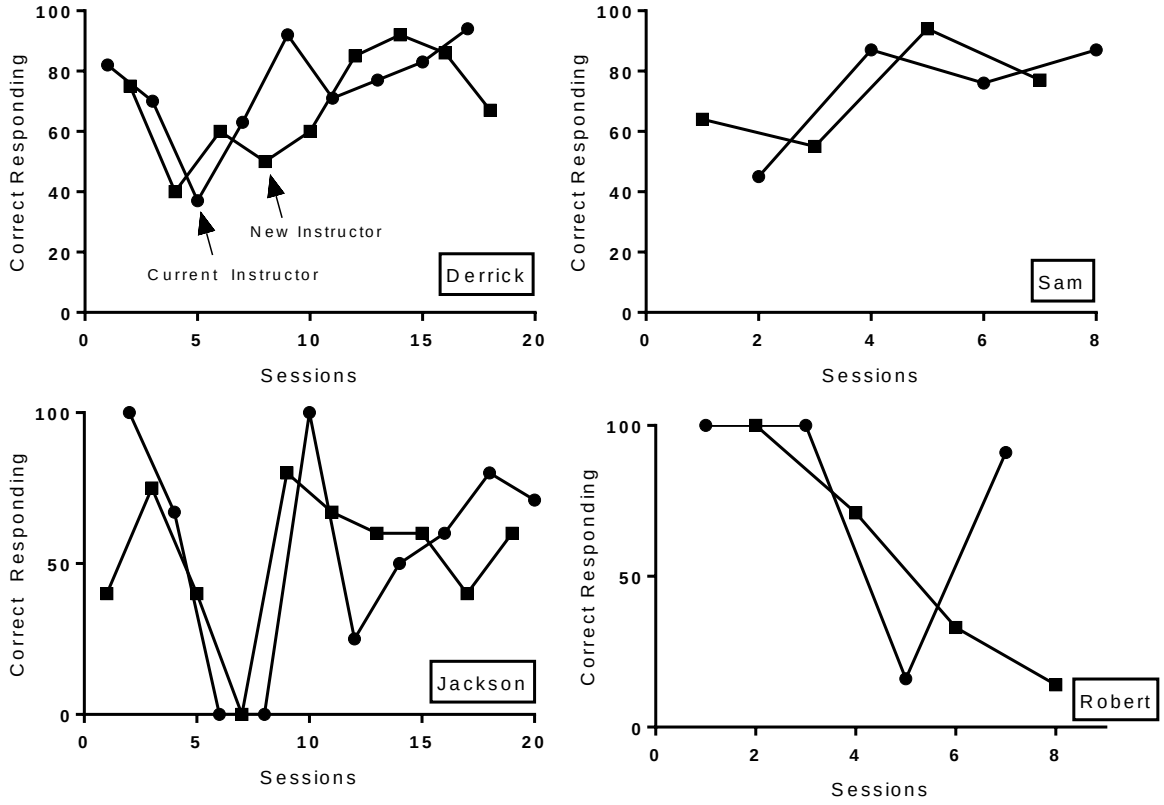

Figure 1. Percentage of correct responding for each participant across familiar (current) and unfamiliar (new) therapists.

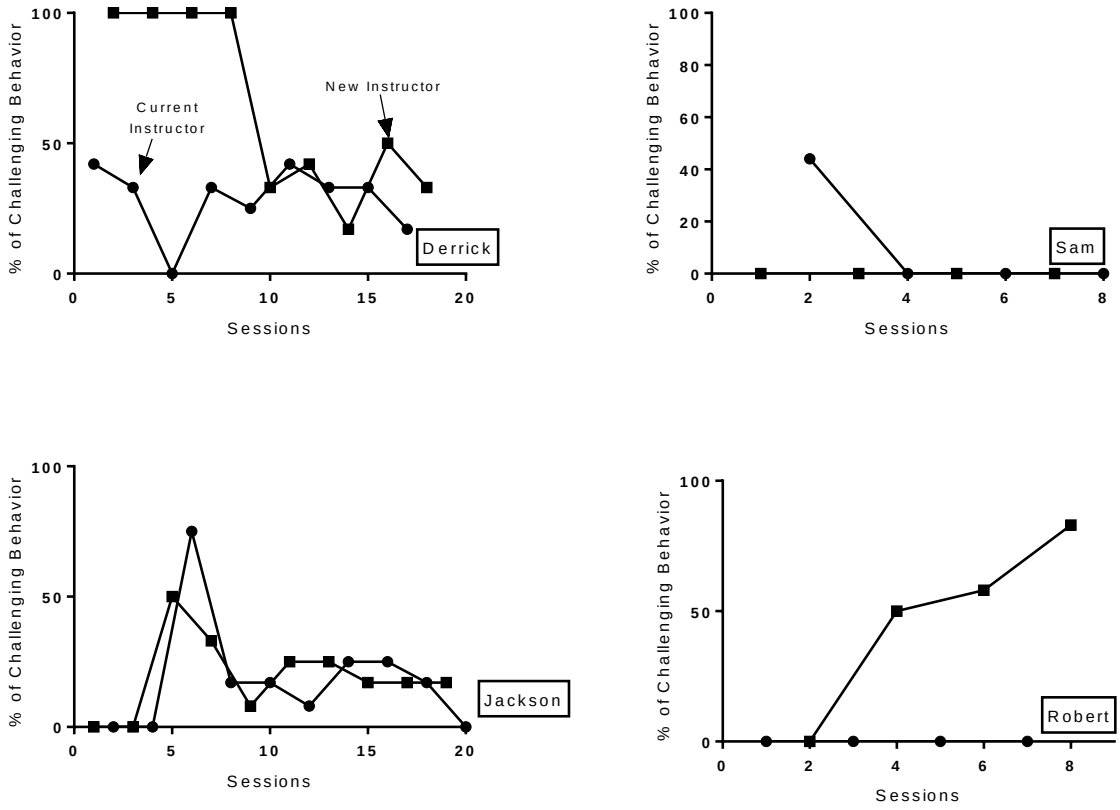

Figure 2. Percentage of challenging behavior emitted by each participant across familiar and unfamiliar therapists.

Discussion

The results of this study indicate no marked differences in level of challenging behavior and correct responding in across familiar and unfamiliar instructors. Two of the four students demonstrated similar patterns of responding across familiar and unfamiliar instructors immediately. The remaining two students also demonstrated similar patterns of correct responding across familiar and unfamiliar instructors immediately. However, higher levels of challenging behavior with the unfamiliar instructors were observed during the initial four sessions, followed by equal levels of challenging behavior across therapists. The lack of differentiation in correct responding and challenging behavior between familiar and unfamiliar therapists observed in this study suggests that relationship history alone does not necessarily affect academic performance in terms of correct responding, or the amount of challenging behavior exhibited by a student. These results indicate no immediate differences when familiar and unfamiliar instructors deliver academic tasks. As a result, future studies should explore this concept further by examining other factors of the instructor and student relationship.

Some limitations of this study should be considered; one limitation was the fact that the students had already been exposed to the activities and tasks. It would be advantageous to systematically measure whether a relationship history influences the rate of the acquisition of new skills, rather than skills already in the student's repertoire, as these results would have greater importance on the implications of initial rapport building procedures for new student-instructor relationships. Additionally, the current study did not systematically implement and manipulate rapport-building activities as described by previous research (e.g., sessions in which the instructor delivers preferred stimuli in the absence of aversive stimuli or work demands). This study only evaluated the differences in responding between familiar and unfamiliar instructors; therefore, conclusions about the value of rapport-building sessions cannot yet be drawn.

Due to a lack of research on this topic, additional research is needed to replicate and expand upon the conclusions of this study. Future research should continue to explore the student-instructor relationship further, specifically pertaining to the initial stages of instruction. Studies that systematically manipulate various rapport-building approaches to analyze their influence on subsequent student behavior are warranted so that evidence-based practices can be used during the initial stages of treatment.

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A Brief Primer of Three Major Counseling Theories for Use by School-Based Personnel

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Abstract

Childhood psychopathology is a large and concerning problem within the school setting. High prevalence rates of childhood psychopathology and resulting poor student outcomes reiterates the need for school service personnel to possess a basic understanding of the major therapeutic approaches to mollifying the difficulties presented by students. Three of these approaches are psychoanalysis, person-centered, and cognitive-behavioral therapy. This article provides teachers and varied school personnel with a working understanding of the theoretical foundations of each these therapies, as well as how each of these approaches conceptualizes childhood mental health disorders. Further, personnel are provided with an introduction to simple methods of addressing student psychological distress derived from each of the theories. These methods of redress include fostering student-teacher attachment, providing students with unconditional positive regard, and challenging cognitive distortions.

Keywords: psychopathology; psychoanalysis; person-centered; cognitive-behavioral therapy

A Brief Primer of Three Major Counseling Theories for Use by School-Based Personnel

This article will discuss three divergent theories of child psychopathology that are frequently utilized within the K-12 school setting. A thorough understanding of the dominant approaches to childhood psychopathology is paramount to the successful remediation of child mental health disorders. Prevalence rates of childhood mental health have estimated that approximately 13% of school-aged children show clinical levels of some form of psychopathological symptomology (Anderson, Howarth, Vainre, Jones, & Humphrey, 2017; Marsh, 2016). Further, students who experience mental health disorders are at an increased risk for special education enrollment, poor academic attainment, increased rates of incarceration, and substance abuse (Chemore, Ou, & Reynolds, 2016). Due to the high prevalence rates of childhood mental health disorders and the related deleterious outcomes, school personnel have become de facto mental health providers.

Many theories have been posited to provide children with effective psychotherapy. These therapies are built on unique paradigms for understanding human nature, psychopathology, and the process of therapeutic change. Individuals who provide counseling services often lean towards one underlying theory through which they frame their understanding of the difficulties experienced by the students with which they work. Due to this, it is important for professionals to introspectively examine the theoretical base that underpins their administration of psychotherapeutic services. A person's theoretical lens influences her or his overall understanding of student behavior, regardless of whether or not they provide direct counseling services to students. In order to help school professionals, both direct service providers and teachers, clarify their understanding of student behavior the following sections will provide a survey of three major theoretical understandings of student psychopathology (psychoanalysis, person-centered, and cognitive-behavioral theories) frequently implemented in the school setting.

Psychoanalysis

Sigmund Freud developed psychoanalysis in the 19th century. The following sections will provide a sketch of the theory's founder, the theory's conceptualization of personality and psychopathology, and the major components of the therapeutic process. Consideration will also be given to the practicalities of implementing psychoanalysis in the school setting and the theory's criticisms.

Biographical Sketch of Freud

Freud received his initial training as a physician and was introduced to neurology in the late 1800s. He met a fellow neurologist and also a practicing hypnotist by the name of Jean Charcot (Seligman, 2006). Freud's observations of Charcot's use of hypnosis to treat psychological disorders led him to consider the importance of unconscious processes in the development of personality and psychopathology (Seligman, 2006). Freud borrowed liberally from varied disciplines and the synthesis of this borrowed information formed the foundation of his theory. For instance, during the early developmental period of psychoanalysis, Freud's adoption of free association was, in part, influenced by the political satirist Ludwig Borne (Seligman, 2006). Later in his career, he began to consider the importance of parent-infant relationships, as well as the internal drive of sexuality across the stages of life (Seligman, 2006).

Foundations and Development

Freud's conceptualization of the development of personality and psychopathology was revolutionary. When people are born they enter the world wholly uncivilized unbounded by inherited behavior patterns (Gillespie, 2014). He posited that innate forces compel humans to seek pleasure and avoid pain. This tendency was termed Drive Theory (Gillespie, 2014). Drive theory holds that human personality is comprised of three primary mental structures.

The first structure is the unconscious Id. The Id is directed by the individual's drives, namely sexual impulse, and seeks to obtain pleasure above all else while avoiding threat or fear (Cheyne, 2016). This is known as the pleasure principle. The second structure is the conscious Ego. The Ego develops around two to three years of age. The Ego's purpose is to exercise control over her or his Id. The third structure is the Superego. The Superego represents the internalization of societal values and standards. The Superego is developed around five years of age, which corresponds roughly to the age at which Freud believed an individual's personality is crystallized.

Throughout childhood development, the Id focuses the acquisition of pleasure on specific areas of the body (Gillespie, 2016). From this assumption, Freud developed his psychosexual stages of development with each stage corresponding to the area of the body from which pleasure is derived. Individuals move from the Oral stage through the Anal stage to the Phallic stage within the first five years of life (Seligman, 2006). Development then enters a Latency period before arriving at the Genital stage during sexual maturity. Throughout this process the Id, Ego, and Superego are constantly conflicting with one another, which results in psychological distress (André, 2015; Saketopoulou, 2014). In order to reign in the Id and alleviate any psychic distress, the Ego develops defense mechanisms (Seligman, 2006). There are numerous different forms of defense mechanisms (Sharf, 2012 [Table 1]). These mechanisms are the manifestation of a

psychic trauma during one of the previously mentioned psychosexual stages. They help to mitigate the negative impact of rigid, extreme, or disordered interpersonal interactions. Freud's theory was important as it posited that human development moved through stages, emphasized personal histories, and placed importance on discrete events within individuals' developmental history.

Table 1
Defense mechanisms

Mechanism	Description
Repression	Removal of adverse experiences from consciousness
Denial	Not acknowledging adverse experiences, thoughts, or feelings
Reaction Formation	Executing a response diametric to an undesirable impulse
Projection	Attributing disturbing drives to others
Displacement	Misdirection of response on others who are deemed "safe"
Sublimation	Modification of an undesirable drive into something socially acceptable
Rationalization	Excuse making
Regression	Reverting to a more immature stage of development
Identification	Taking on characteristics of idealized others
Intellectualization	Logical analysis of emotional occurrences

A derivative concept that was developed by Neo-Freudian psychoanalytic theorists is attachment. Babies observe how their parents or guardians react to them and integrate this information into their understanding of themselves and others (Feinman, 1982). This integration will later affect their specific temperamental styles, intrapsychic processes, interactions with others, and their functioning within social systems such as schools or classrooms (Seligman, 2006). Poor attachment can manifest as future difficulties with emotional regulation and poor interpersonal interactions (Ainsworth, 1985; Lewis, Feiring, & Rosenthal, 2000).

Adult-student interactions in the classroom are imperative to both behavioral and academic functioning. Thus, maladaptive student functioning cannot be fully understood without an understanding of the reciprocal nature of attachment. Student actions lead to teacher reactions in a circular fashion (Seligman, 2006). Students who engage in more pro-social behaviors tend to receive more positive feedback from their teachers (Thornton, 2008). An unhealthy student-teacher attachment may amplify the occurrence of pre-existing behavioral problems (Borders, Bock, Whitley, & Probst, 2017).

Therapeutic Process

The first stage of the therapeutic process involves raising the patient's consciousness. During this stage, the service provider attempts to bring into consciousness the issues that caused the student's stage fixation. Once the problem is identified, several analytical techniques are applied. The first is free association. Within free association, students are encouraged to state out loud

any thought that comes to their consciousness. These associations are assumed to be representative of the underlying concerns being targeted within the therapeutic setting (Gillespie, 2016). Another technique is dream analysis. The service provider analyzes the manifest content, or what is actually remembered from a student's dreams, for the latent or unconscious meaning of the dream (Sharf, 2012). Throughout this process the therapeutic relationship is characterized by transference. Transference is the assumption that the student will relive the maladaptive interpersonal relationship with the service provider (Sharf, 2012).

Practicalities and Criticisms

Freud provided one of the first comprehensive theories of human psychological functioning. His theory imparted several important factors that have greatly influenced the field such as the consideration of personal histories and a staged developmental framework. The concept of transference and the Neo-Freudian emphasis on attachment may be offer practical value in the school setting. Despite these contributions, the application of psychoanalysis in the school setting has been purported to be of questionable practicality.

Both counselors and teacher may benefit from the understanding and application of transference, especially in the context of teacher/student relationships. The teacher may become a proxy representation of the student's caregiver or parent. Maladaptive behaviors exhibited by the student directed towards the teacher may be representative of the unhealthy relationship experience by the student with her or his attachment figure outside of the school. By understanding this dynamic, adults can glean insight concerning what may be the etiology of a student's maladaptive functioning and use this information to teach the student a new more pro-social relational style.

Attachment may also be an important consideration for school-based personnel to consider in light of student relationships. Considering students' attachment to their teachers cannot only indicate etiological factors, but can also directly inform areas for intervention. The inclusion of interventions addressing student-teacher interactions can help to repair these important relationships (Miklowitz, 2004). Attachment can be improved by teaching and ensuring that teachers, service-providers, and students use reflective listening, show respect, and use emotionally encouraging language (Borders et al., 2017; Madill, Gest, & Rodkin, 2014).

Despite these possible applications, the use of psychoanalysis in the school setting has faced numerous criticisms. The first is that the theory may not be developmentally appropriate for younger students given the emphasis on sexuality. Also, students, especially those with cognitive or intellectual disabilities, may not possess the necessary introspective abilities to fully participate in the therapeutic process.

The second criticism is that psychoanalysis can be a very involved process that requires guidance from an expert. This may limit the generalizability of the therapy's effects to settings outside of that in which the student receives the services. Intensive time requirements may also delay addressing the issues causing the student's pathology (Piper, McCallum, Joyce, Azim, & Ogrodniczuk, 1999). Studies attempting to examine the effectiveness of short-term psychoanalysis have shown equivocal results (Piper et al., 1999). This is pertinent to the school

setting as it may be difficult to schedule adequate amounts of time needed to execute the psychoanalytic processes.

Traditional psychoanalysis is also lacking empirical support, as Freud developed his theory based on individual case studies. Furthermore, many of the concepts foundational to psychoanalysis can be very difficult to operationalize (Lazarus, 2005). The move towards evidence-based practice requirements in education (United States Department of Education, 2016) may disavow the use of psychoanalysis within the school setting.

Person-Centered

Carl Rogers developed the person-centered therapeutic framework in the 1940s. This theory falls under the umbrella of the Humanistic approaches. The Humanistic approaches were developed in response to the perceived weaknesses of both the psychoanalytic and behavioral philosophies of development and psychopathology. The person-centered theory holds that people are not bound by our internal drives, or by the contingencies present in their environments.

Biographical Sketch of Rogers

Carl Rogers was raised within a devoutly religious family. During his childhood, he had little to no contact with other children. He began his academic career as an agriculturalist, but as a graduate student he shifted his interest towards clinical psychology. He gravitated towards pastoral counseling, but eventually received his PhD from Columbia University in psychology (Sharf, 2012). Mr. Rogers was nominated for a Nobel Peace Prize. He believed until his death that personal experience was the bedrock of truth in existence.

Foundations and Development

The foundational principle within the person-centered approach is that all human beings have worth simply because they exist and, in turn, every human being should be treated with dignity. The person-centered approach focuses on the students' interpretation of their life (Sharf, 2012). Rogers held that children should be granted freedom of choice towards their individual goals (Sharf, 2012).

The self is seen as malleable and the goal of development is to maximize individual potential (Rogers, 2007). Personality is viewed as the sum of a student's interpersonal interactions with those who are important to her or him. In order to become a fully adjusted individual, the student must be involved in positive interactions in which she or he receives unconditional positive regard (Rogers, 2007). Expressions of love and worth that are not dependent on compliance to or the meeting of adult imposed conditions characterizes unconditional positive regard (Scharf, 2012). The hallmarks of full adjustment are openness to new experiences, having internal meaning, and possession of trusting relationships. Pathology tends to be manifested as internalizing disorders. It is seen as being the result of an individual experiencing conditionality (the exact opposite of unconditional positive regard) or possessing incongruence (Rogers, 2007). Incongruence occurs when there is a discrepancy between what one wants to be (ideal self) and what one actually is (real self). The larger the discrepancy is between these two forms of self, the more severe the pathology (Rogers, 2007). The core concepts of Rogers' theory are summarized in Table 2.

Table 2
Core concepts of the person-centered approach

Concept	Description
Unconditional Positive Regard	Displays of love, caring, and respect directed to student
Conditionality	Feelings of worth dictated by meeting others standards
Ideal Self	How a student views her or his self
Real Self	How others view the student
Congruence	Synchronicity between the ideal and real self
Incongruence	Discrepancy between the ideal and real self

Therapeutic Process

The therapeutic focus disregards traumatic events of the past in order to move the student forward in a positive manner. The person-centered approach involves creating a warm and supportive environment that is conducive to self-exploration and personal growth. This is done through providing unconditional positive regard, facilitating congruence, and displaying empathy to the student (Rogers, 1975; Rogers, 2007). The person-centered approach is largely built on autonomy and disavows the hierarchical nature of other psychotherapeutic theories where the direction of therapy is driven by the therapist (Schmid, 2012). It is also important to affirm the student's power to change her or his life. The school-based therapist seeks to create a positive relationship with the student, informs the therapy sessions, and helps the student create and realize personal goals.

Practicalities and Criticisms

The person-centered approach seems to have practical value for students in nearly all therapeutic settings. It is well suited for individuals who are lucid, experience internalizing disorders (Stiles, Barkham, Mellor-Clark, & Connell, 2008) and already have semi-adequate emotional resources. The components of positive regard, empathy, and congruence can be applied across settings, ethnicities/races (Huey & Polo, 2008), and ages (Daniunaite, Cooper, & Forster, 2015). The person-centered approach could act as a valuable compensatory measure, and be easily incorporated into the counseling process in singularity or as an additive measure to other approaches (Daniunaite, Cooper, & Forster, 2015).

Several criticisms have been leveled at Rogers' approach. First, its focus on the individual may not be appropriate for those students who highly value their community (Seligman, 2006) or are more concerned with attaining the goals of the social group to which they ascribe (Holdstock, 2011; Poyrazil, 2003). Also, much like the psychoanalytic approach, it seems best suited for older students due to the level of introspection required. The student must also have adequate

cognitive and language abilities in order to be the originator of her or his learning (Gatongi, 2007).

Critics also state the theory does not provide any standardized professional techniques for applied use (Gatongi, 2007). This is related to the fact that there are no pre-established therapeutic goals or standardized and systematic treatment outcomes linked to the person-centered approach. Much like the psychoanalytic theory, it is difficult to examine the efficacy of Rogers' approach since there is a of lack empirical evidence supporting the use of the person-centered approach as a stand-alone therapeutic process.

Finally, it may be difficult to implement within the school setting because it can require an extended amount of time to attain congruence (Sharf, 2012). This can significantly hinder the rate of therapeutic movement towards facilitative change. Furthermore, both planned and unplanned turnover of school personnel can significantly hinder the development of a therapeutic alliance between students and service providers, which may result in deleterious treatment outcomes (Zirkelback & Reese, 2010).

Cognitive-Behavioral Therapies

Cognitive-behavioral therapies are thought-focused systems of treatment. Much like earlier psychotherapeutic theories, they were developed in response to the shortcomings of previous theories of the time. Albert Ellis and Aaron Beck are frequently referred to as the foundational thinkers of cognitive-behavioral therapies. This form of therapy views cognitions as both a basis and interactional factor of emotions and behavior.

Biographical Sketch of Ellis and Beck

Albert Ellis was the primary developer of Rational Emotive Behavior Therapy. As a child, Ellis was extremely ill and raised in a cold family system (Sharf, 2012). Famously, as a young man Ellis was reticent to speak to women. In order to overcome this fear, he challenged himself to ask 100 women out on a date. He was rejected 100 times, but came to realize that the rejection events held no intrinsic impact on his life, rather how he thought about the rejections is what shaped how he was impacted by them (Sharf, 2012). This exercise foreshadowed the key components of his form of cognitive-behavioral therapy.

Aaron Beck was trained as a medical doctor and practiced psychiatry. Initially, he exercised a psychoanalytic approach to treatment. He developed the concept of automatic thoughts (thoughts clients were not aware they were thinking) through his clinical practice as a psychoanalytic therapist (Sharf, 2012). He expanded on this initial idea to focusing on how clients constructed understandings of their experiences and how these understandings impacted their thoughts, affect, and behavior (Sharf, 2012).

Foundations and Development

The cognitive-behavioral approaches posit that pathology is the result of errors in students' beliefs and thinking. Students' reality distortions manifest as exaggerated negative evaluations of reality, which result in faulty self-appraisals (Sharf, 2012). Further, students may attribute poor outcomes to a behavior prior the behavior being enacted. These expectations can lead to over-

controlled behavior (anxiety or fear) or result in inaccurate attributions of others' intentions (Ellis, 1974).

In light of these assumptions, both of the theories hold that to address a student's pathology service providers must dispute and change the student's faulty thoughts that distort her or his perception of reality (Ellis, 1974). To address these maladaptive thoughts, the cognitive-behavioral theories teach individuals several skills. Through the structured and directive use of the Socratic Method, school-based personnel can teach individuals to accept and deal with the highs and lows of life. In order to address an individual's distorted cognitions, cognitive-behavioral therapists seek to teach more adaptive thought processes to students through the use of inductive reasoning and student homework. If school-based personnel are successful, their students will exercise healthier forms of thinking, and these results may present themselves in a little as 10 to 16 weeks. With this information as the basis for understanding, some specific components of cognitive-behavioral therapies will be discussed below.

Therapeutic Process

The cognitive-behavioral approaches have been applied to a range of childhood disorders (Reinecke, Dattilio, Freeman, 2003). Regardless of presenting problem, there are some shared generalities between the cognitive-behavioral approaches. Rapport is established with the student and the service provider asks probing question to reveal automatic maladaptive thoughts and negative self-evaluations (Gonzalez, Nelson, Gutkin, Saunders, Galloway, & Shwery, 2004; Sharf, 2012; Weisz & Gray, 2007). These maladaptive thoughts and negative self-evaluations are signaled by the presentation of dogmatic beliefs in the form of "musts," "shoulds," and "oughts" (Ellis, 1974). The information gathered from these questions is used to develop individualized treatment goals targeting varied cognitive distortions. Table three provides a listing of some common thought types that lead to inaccurate or ineffective information processing.

Table 3
Common cognitive distortions

Distortion	**Example**
Catastrophizing	"If I fail this test my life is over."
Minimizing	"I only passed this test cause I got lucky."
All or none thinking	"If I fail this math test then I must just be terrible at math."
Fortune telling	"I just know I'm going to fail this test."
Labeling	"I'm stupid, that's why I failed the test."
Overgeneralization	"I failed this test, so I'll probably fail every other test."
Fallacies of external control	"I failed the test not because I didn't study, but because the teacher made the test too hard."

Service providers then provide students with psychoeducation regarding the genesis and course of the presenting disorder (Weisz & Gray, 2007). Compensatory strategies are identified to address and challenge the student's automatic maladaptive thoughts and negative self-evaluations. These strategies typically consist of self-monitoring, positive self-speech, problem-solving practice, and exercises to address associated physiological and psychological stress (Gonzalez, Nelson, Gutkin, Saunders, Galloway, & Shwery, 2004; Reinecke, Dattilio, Freeman, 2003; Sharf, 2012; Weisz & Gray, 2007). Commonly taught exercises include diaphragmatic breathing, progressive muscle relaxation, and/or guided mental imagery (Gonzalez, Nelson, Gutkin, Saunders, Galloway, & Shwery, 2004; Reinecke, Dattilio, Freeman, 2003; Sharf, 2012; Weisz & Gray, 2007).

Practicalities and Criticisms

The cognitive-behavioral treatments have a well-established research base supporting their efficacy for a host of childhood psychopathologies. They have extensive evidence supporting their use for depression, anxiety, conduct disorder, ADHD, poor academic achievement, and low self-esteem (Gonzalez, Nelson, Gutkin, Saunders, Galloway, & Shwery, 2004; Reinecke, Dattilio, Freeman, 2003; Sharf, 2012; Weisz & Gray, 2007; Zirkelback & Reese, 2010).

While treatment goals are individualized, cognitive-behavioral approaches are highly amenable to treatment protocol standardization. This is to the benefit of students as it allows individuals with less expertise to deliver potentially beneficial psychotherapeutic interventions (Gonzalez, Nelson, Gutkin, Saunders, Galloway, & Shwery, 2004). This characteristic of cognitive-behavioral theories helps to create a shared responsibility for student mental health in schools and expands the role of service provider to all school based professionals (Gonzalez, Nelson, Gutkin, Saunders, Galloway, & Shwery, 2004).

Critics of the cognitive-behavioral theories have claimed that these psychotherapeutic approaches are unnecessarily focused on altering students' cognitions. This claim has been supported by research indicating that treatment approaches not specifically targeting the alteration of students' cognitions have previously shown efficacy results paralleling those of the cognitive-behavioral based treatments (Weisz, McCarty, & Valeri, 2006).

Conclusion

Childhood psychopathology affects a large proportion of the school age population. Untreated childhood psychological disturbances are frequently accompanied by deleterious outcomes for both the individual and the society in which the individuals live. Due to compulsory education, schools have morphed into de facto mental health providers. This fact has necessitated that school-based personnel familiarize themselves with varied theoretical orientations to the treatment of psychological disturbances presented by students. Psychoanalytical, person-centered, and cognitive-behavioral therapies are three major approaches to psychotherapy frequently utilized within the school setting. Psychoanalytical, person-centered, and cognitive-behavioral therapies were all by-products of the unique histories of their respective founders. Despite this fact, these theories differ in many respects. All three vary in regards to the duration,

directiveness, focus, origin of pathology, and goal of treatment. Table four summarizes each of these characteristics as they pertain to each theory.

Table 4
Comparison of the characteristics of the theories of psychoanalysis, person-centered, and cognitive-behavioral approaches

	Counseling Theory		
Characteristic	Psychoanalysis	Person-Centered	Cognitive-Behavioral
Duration	Lengthy	Client Dictated	Brief
Directiveness	Unstructured	Less Structured	Structured
Focus	Unconscious	Congruence	Thoughts
Pathology	Unresolved conflicts	Conflict between ideal and real self	Irrational thinking
Goal	Resolving fixation	Aligning the selves	Improving thought processes

School personnel will benefit from understanding the basic components of each theory. A strong understanding of the underpinnings of each theory allows service providers to enact treatment protocols tailored specifically for each student's unique presentation of psychopathology. With that said, a final recommendation is that school personnel should not rigidly adhere to a particular orientation, but rather seek to utilize specific theoretical approaches for specific presenting issues or integrate applicable treatment components from two or all three of these theories in a transtheoretical treatment paradigm to remediate students' presenting problems.

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