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Social Skills Interventions for Secondary Students With Asd

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SOCIAL SKILLS INTERVENTIONS FOR SECONDARY STUDENTS WITH ASD

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Abstract

Social skills instruction (SSI) is an area of high need for students with Autism-Spectrum Disorder (ASD). The SSI of secondary-aged ASD students is unique given that the law mandates transition (after high school) goals in the Individualized Education Program (IEP) at the age of 14 in Minnesota, and specialized services end upon graduation. For students to meet their goals and to be prepared for the end of services, SSI needs to incorporate skills and develop abilities that will be necessary in daily activities after graduation. Six areas of application were identified: address transition needs early, to include employment skills, to include student input, to encourage student-created videos for skill demonstration, to include ASD students in peer-groups, and that social skills are as important as academic skills.

Table of Contents

Chapter 1: Introduction

The number of students with Autism Spectrum Disorder (ASD) has increased, as has the movement towards inclusion for curriculum delivery. However, the social needs of students with ASD may not be fully met (Symes and Humphrey, 2010). Students who have ASD by definition have a deficit of social skills and schools have responded by developing and using different curriculum to address these deficits. Specific social skills curricula have been developed in the absence of state standards in nearly all 50 states, leaving teachers without the guidance of specific, social skills standards.

At the time of writing, the absence of specific social skills standards does not mean the absence of any standards. Within the State of Minnesota, this would include high school English Language Arts (ELA) standards as a guiding standard. The standards 9.9.1.1, "Initiate and participate effectively in a range of collaborative discussions (one-on- one, in groups, and teacher-led) with diverse partners on *grades 9–10 topics*, *texts*, *and issues*, **including those by and about Minnesota American Indians**, building on others' ideas and expressing their own clearly and persuasively" (Minnesota English Language Arts standard) and 11.9.1.1, which states the same standard reworded for grades 11 and 12. Also, standard 11.9.6.6, which states "Adapt speech to a variety of contexts, **audiences,** tasks, and feedback from self and others, demonstrating a command of formal English when indicated or appropriate" (Minnesota English Language Arts standard) . In conjunction with the literature review, these standards will be a guiding light for social skills instruction for secondary ASD students.

The guiding question for the literature review is that given the aforementioned standards, what social skills do students with ASD need at the secondary level? By law, their Individual Education Program (IEP) must include planned related to life after graduation across three areas

in the State of Minnesota: "postsecondary education or training, employment, and independent living" (Minnesota Department of Education). In other words, when an ASD student enters high school, their IEP and elective courses is in large part driven by what they want to achieve after high school. Therefore, what instruction do ASD students need in order to help meet their transition planning?

Unfortunately, much of the available social skills curriculum that is readily available is not geared towards students with transition needs, or is not age-appropriate for secondary students. There is a need for age-appropriate curriculum that takes into consideration the transitional needs of students. Curricula that are commonly used at the elementary and middle school levels do not account for the change in age of the students, nor their transition needs. A fifteen year old with ASD who wants to obtain employment and attend post-secondary training, inherently has different social needs from younger counterparts in elementary and middle school. Terms:

HFASD: High Functioning Autism Spectrum Disorder

ASD-ID: Autism Spectrum Disorder-Intellectual Disability; individual has dual diagnoses of autism and intellectual disabilities

VR: Vocational Rehabilitation; employment-oriented services available to qualifying students who receive specialized services

IEP: Individualized Education Plan; collaborative plan required by law to address an individual student's educational and social needs; required by federal law

PAR: Participatory Action Research; research involving a variety of stakeholders

Transition: Student planning for life after graduation that is required by federal law

MLSC: My Life in School Checklist

SSSC: Social Support Scale for Children Survey

SIS: Social Inclusion Survey

<center>**Chapter II: Literature Review**</center>

Introduction

To conduct the literature review, peer-reviewed and published articles were searched for with the following search terms: ASD, HFASD, social skills, secondary social skills, and transition skills. Much of the social skills research for ASD is focused on elementary-aged students. Due to this, it was impossible to completely eliminate all social skills research that was not at the secondary or transition-age level. However, the use of articles that targeted elementary ages was minimized, and kept to articles that contained information that was translatable to the secondary level.

Stakeholders

Due to the increased diagnosis of ASD in children, many of whom have high functioning autism, and the increased trend to educate the students with their regular education peers, authors Ostmeyer and Scarpa (2012) studied factors behind student success in the classroom. Ostmeyer and Scarpa (2012) focused on the involvement of school stakeholders, and how their responses might guide social skills training.

The authors used participation action research at an elementary school to inform the development of social skills training for students with high functioning autism (HFASD). Through participatory action research (PAR) the Ostmeyer and Scarpa (2012) examined three areas: the need for social skills interventions, the possible benefits of interventions, and the barriers to the school implementing the interventions (p. 935).

The study included fourteen staff at an elementary school that was local to the authors. Twelve of the staff were teachers and the other two staff included a principal and a school psychiatrist. A total of 86% of the staff in the study had experience with, or were working with

students who had HFASD. Additionally, two mothers of students with HFASD were included as non-school employee stakeholders, and two students with HFASD were selected for observations in fourth and fifth grades (p. 935).

This was a mixed methods research project. Participants completed questionnaires individually, and also participated in focus group interviews. Additionally, observations of two students with HFASD were conducted for social skills needs. Participants were given a 5 point Likert scale questionnaire ('do not agree' to 'strongly agree') that covered 8 questions. Following questionnaire completion, participants were given 5 open-ended questions (p. 935).

Participants could choose either the focus group, or an individual meeting. Each meeting or group lasted 60-90 minutes and included a presentation about social skills. Lastly, observations of two male students with HFASD for six hours each, across three classrooms were conducted. The students were in fourth and fifth grades (p. 936).

The following table simplifies the results from the questionnaire. Twelve staff members, and of two mothers of students with HFASD completed the questionnaire, using a scale of one to five.

Question	Staff average	Mother Average
Social skills needed?	4.86	5
General ed peers educated about HFASD?	4.64	5
Educating gen ed peers help with HFASD interactions?	4.64	5
Peers learn strategies for HFASD interactions?	4.46	5
Peers help with HFASD students develop relationships?	4.57	4.5
Social difficulties affect relationships?	4.5	5
Socials training should be taught?	4.92	5

Staff likely to use social skills training?	4.92	5

(Ostmeyer and Scarpa, 936)

The qualitative results highlighted three main themes: a lack of time for social skills, the need to keep inclusion, and a lack of commitment to social skills (p. 936). Additional concerns were that social skills should focus on the class as a whole, rather than an individual student, and that individual students may need additional training for social skills.

Ostmeyer and Scarpa (2012) concluded that social skills training for students with HFASD was identified as a need, as shown by staff and mother responses. The qualitative data showed the concerns with implementing social skills training for students with HFASD. Concerns were that social skills training would result in missed core or general curriculum time. Resource room based social skills would likely not be the preferred method of social skills instruction for this specific school due to those concerns (p. 937).

This was a very small study with only 14 participants, with a short questionnaire of eight questions. The study also did not directly include students, although observations were conducted with two students. This was also geographically restricted, as the elementary school was local to the authors, and was the only school included in the PAR.

However, the focus group approach obtained specific data for the elementary school. This approach involved a spectrum of teachers (general education, arts, principal) and at least two non-staff stakeholders. Most importantly, Ostmeyer and Scarpa (2012) drove home the point that social skills training, as well as mental health programs, in the schools "fail because they are conceived, planned, and implemented by researchers without the input of stakeholders" (as cited from Flaherty, Weist, & Warner, 1996, p. 939).

The reduction of the failure of social skills is critical because social skills, or the lack of them, can have a significant impact on the academic success of a student. Due to this impact, the

authors sought stakeholder input on social skills training in a local elementary school through (PAR). The social skills training specifically addressed the needs of students with HFASD. Students with HFASD tend to have average or above IQ scores, but do not perform as well as their peers due to a lack of communicative social skills.

The study was comprised of qualitative and quantitative data. The quantitative data was 8 questions with responses ranked 1-5. A score of 1 meant 'disagree' and a score of 5 meant 'strongly agree'. The averages from the staff and mothers both showed the need for social skills training in the school. The follow up, open-ended questions showed that while there was a need for social skills, there were concerns about how and when to implement. The concerns revolved around continuing with the inclusion model of education, and balancing that with the need of individual students who would require additional pull-out instruction.

Ostmeyer and Scarpa (2012) concluded that social skills training for students with HFASD was needed at this elementary school. To fully address this need would require continued, sustained, and additional input from stakeholders, an attribute that most social skills trainings do not address.

Involving stakeholders with social skills can also be used within a school building to address social interactions between non-disabled peers and students with ASD. Peer social interaction remains a challenge for many students with ASD. Students with ASD have limited social interaction during the school day and in after school activities, do not see friends outside of school on a regular basis, and are not invited to activities throughout the school year. Due to this, students with ASD report being bullied, report feelings of isolation, and exclusion. The authors (Gardner, Carter, Gustafons, Hochman, Harvey, Mullins & Fan, 2014) sought to evaluate the efficacy and validity of peer networks to develop social interactions and increase social

skills.

Gardner et al. (2014) organized a group of three to six non-disabled peers with similar interests to one student with ASD. The group was facilitated by an adult who gradually reduced their direct support with the group. The researchers asked three research questions: "do peer networks increase social interactions among students with ASD and their peers without disabilities?; how do students, peers, and educators view the feasibility and acceptability of arranging peer networks within a high school?; which of the peer networks was implemented with high fidelity by school staff, and which components were more challenging to implement?" (Garder et al, 2014, p. 102). While not a specific research question, the authors were also interested in the views of stakeholders.

There were only two participants with ASD in the study, both male, ages 18 and 14. In addition to a diagnosis of ASD, both participants had additional diagnoses (ADHD, intellectual disability, and oppositional defiant disorder, or ODD). One student was educated within the mainstream classroom, while the other received all of his education within the special ed classroom. Each student attended a different high school, both in diverse, urban setting (Gardner et atl., p. 102).

A paraprofessional and a special education teacher, both male, facilitated the group. The meetings were facilitated for 30 minutes, 2-3 days per week for both students during their advisory periods. For both students this was unstructured time during the school day. The peers were recruited from within the advisory periods for each student. A total of three peers were recruited for each student, none of whom had a diagnosis of ASD.

Quantitative research with partial-interval recording in 15-second intervals was chosen to collect data on interactions, engagement, and individual social goal (Gardner et al, p.103). Social

interactions were coded as *verbal* or *non-verbal* "behaviors that appeared to have a communicative intent" (Gardner et al, p. 104), and were separately coded as communication *from* the student, and communication *towards* the students. Social engagement was coded as active, passive, or unengaged (Gardner et al, p.104). Lastly, each of the students had a social goal based on their Individual Education Plan (IEP) goal. One student had a goal to *wait for his turn in a conversation without interrupting*, the other *to maintain social engagement with peers for 15 minutes*.

A checklist for support behaviors was completed the end of observations. The behaviors were recorded as *occurred/did not occur*, and included: prompts to interact, encouragement to interact, taught explicit social skills, prompt to use devices, modeled a skill, behavior self-management, praise, and support or advice (Gardner, et al., p.104).

Lastly, the quality of interactions was recorded in three areas: interaction reciprocity, affect, and interaction quality. Reciprocity and affect were recorded as 1, 2 or 3 (low, medium, high, and negative, neutral, positive, respectively). Interaction quality was recorded from 1-5, low to high (Gardner, et al., pp. 104-105).

To determine whether social interactions continued without the group structure, ABAB and ABA withdrawal designs were used. Facilitators and peers received training to become familiar with their roles in the group. Baseline data was also obtained during advisory periods. At least one activity or conversation was planned, facilitated with a shared iPad. Activities included: current or school events, trivia game, word game, card game, or an arcade game (Gardner, et al, p.107). Everyone in the group had to participate in the activity.

To assess social validity, Likert-type and open-ended question surveys were given to the parents and students with ASD. The facilitators and peers also completed surveys with a similar

format; 19 or 20 Likert questions, and four or five open-ended questions.

The use of a peer network increased the average level of engagement for both students in the study. For Student #1, active engagement increased from 4% to 68% during intervention from baseline data. During a withdrawal phase, active engagement fell to 11% of intervals, and rose to 56% after reintroduction. Similar results were observed for peer interactions. Student #2's peer interactions increased from 3% to 54% with intervention. During withdrawal, interactions decreased to 8% and back up to 44% with re-introduction (Gardner, at al., p. 109).

George experienced similar results, going to 50% from 10% of active engagement in intervals. Peer interactions increased from 16% to 65% during intervention. During a withdrawal phase, George decreased to 14% and 19% for engagement and interaction. Due to unexpected behaviors, there was not an opportunity to obtain rebound results for engagement or interaction (Gardner, et al, p. 109).

In the social validation questionnaires, peers and facilitators both responded that they felt effective, expressed desire to continue a peer network, and enjoyed participating in the network (Gardner et al, p. 112). Additionally, the facilitators responded that the time required for the network was reasonable. Responses from parents were also positive regarding the peer network, as were the open-ended questions. One parent wanted their child to continue with the peer group, and peers responded that it gave them a space to see different points of view.

There were five takeaways from the research discussed by Gardner, et al. (2014). One, that while the peer network increased social interaction and engagement, it revealed that each student had additional social needs (not interrupting, initiating conversations). Two, that the peer network needs to be sustained throughout the school year, and outside of advisory. Three, that staff are receptive to and responded positively to the peer networks, both in outcomes and

continuation. Four, that the peers (both disabled and non-disabled) reported becoming friends by the end of the school year. Lastly, the interactions needed adult facilitation, both for planning and instigation (pp. 114-115).

The main issue with this study is that it had only two participants with an ASD, each in a different school, making the study extremely small and isolated. One of the students was not observed for an intervention after withdrawal of the social group. Despite its small size, the study demonstrated the need to include same-age, non-disabled peers into social interactions and engagement. The study also showed the need to include the parent views and inputs into their child's social skills, as discussed previously.

While parental input is needed for a social skills program, participating students also need to voice their input into social skills training. Lehenbauer, Kothgassner, Kryspin-Exner, and Stetina (2012) developed internet-based cognitive behavioural therapy (CBT) to treat social phobia (SP) in young adults 16-24. While not explicitly pertaining to ASD, given that students with SP tend to be shy, have social anxiety and social skills deficits, and display fear of public speaking (just like many students with ASD), and the rise in online courses at the secondary level, the research is readily translatable to students with ASD.

The authors met with groups of four to develop the online training program Over the course of three meetings with the focus group of students. Ideas were collected for the training design in the first meeting. Critiques of the design were sought in the second meeting. Participants requested comics over videos and text, and that it should be fun. The last meeting sought further critiques of the training, including the difficulty of text and the length of lessons (Lehenbauer et al., 2012).

A voluntary pilot study was conducted with a control and intervention group (CG and IG)

using this design. A total of 108 students participated through completion, 61 in the IG and 47 in the CG. Majority of participants were female (93) and 98 of participants were in high school, with seven at the university level.

Fourteen lessons were developed through three phases. Lessons 1-6 were based on CBT, lessons 7-12 were based on social skills training (SST), and the last two, 13 and 14, were designed for relapse prevention. Each lesson was 30-50 minutes and followed similar flow: review, comic information and games, homework, and body relaxation techniques (Lehenbauer et al, 219). All lessons were accessible through a link sent via email.

Surveys were used to assess social phobia and fears amongst participants. The Liebowitz Social Anxiety Scale (LSAS), Social Phobia Inventory (SPIN), and the Frankfurter Self-concept Scales (FSKN) were used. The LSAS provided scores "for fear of social interaction, fear of performance, avoidance of social interaction, and avoidance of performance" (Lehenbauer et al, 220). From the SPIN, scores for SP were obtained, ranging from non-phobic to socially phobic. Here, 10 subscales scored items such as problem solving, self-worth, and mood.

After completing lessons, 12 of the participants in the IG no longer met criteria for SAD, compared to 27 prior to treatment. On the FKSN, the IG had significant effects in 6 out of 10 of the subscales; 4 of the subscales did not show any significant effects (i.e., feelings and relationships). Results from the LSAS in fear-related scales and subscales decreased within the IG (Lehenbauer et al, 219). Specifically, fear and avoidance behavior improved. The results showed that "online-training is effective in comparison to a non-intervention group in providing social skills as well as in preventing fears" (Lehenbauer et al, 223).

This was a small pilot study, and when published, was the only known study that involved students in a focus group to develop an online social skills program. The study was also

extremely lopsided with sex-ratios, only 15 of the 108 participants were male. As mentioned previously, the study did not address students with ASD, but rather students with SP with symptoms similar to students with ASD.

The study demonstrated the need to involve stakeholders in program development. The study validated the benefits of online social skills training for students who have the motivation and skills to participate.

Post-Secondary Outcomes and Expectations

Students with ASD face several challenges as they graduate or age out of transition services, not least of which is employment outcomes. Transition services are special education services provided after high school through the age of twenty-one, and is optional for students who qualify. Ditchman, Miller and Easton (2018) stated that students and young adults with ASD face several challenges with employment, "including unemployment, underemployment, and disparities in compensation" (as cited in Shattuck et al, 2012). Ditchman et al. (2018) continue that for individuals ages 21-25, 37.2% of individuals with ASD are employed for pay, versus 60% of individuals with other disabilities (as cited in Newman et al., 2011).

Individuals with ASD can be eligible for vocational rehabilitation (VR). VR services are available in all 50 states with services provided to over 1 million people annually. For individuals with ASD, there was a tripling of VR services from 2003 to 2008 (Ditchman et al., p. 144). A total of 22 possible services are available through VR. The authors' central question was to determine if a two-mode network analysis could be used to understand patterns in employment outcomes for individuals with ASD who receive VR services (Ditchman et al., p. 144).
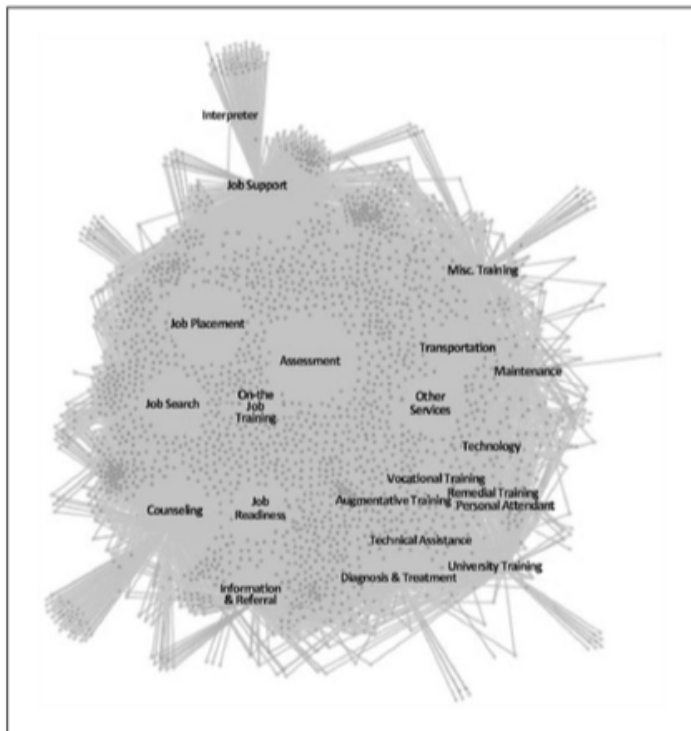
The network analysis evaluated data from Rehabilitation Services Case Administration Report (RSA-911) from the fiscal year 2009. A total of 2,129 individuals met the following five

criteria: ages 16-24 (transition age), primary disability of ASD, had an IEP while attending

school, was not working when the application for VR services was made, and left VR services

either when employed for 90 days or when case closed unsuccessfully (Ditchman et al., p. 145).

The demographics included 1,794 individuals, the majority were male with 335 female. The

mean age was 18.5 years old. Half were between ages 16 to 18, and 29.9% received social

supplementary income (SSI), while 82.2% were white (Ditchman et al., p. 145).

To analyze the data from the RSA-911, a two-mode categorical/core periphery model

was used with density and degree centrality (Ditchman et al., 2018). Density represents the

number of ties within the network, the 22 possible services in VR, and was divided by the

number of individuals receiving services, 2129. Density ranged from 0 to 1, representing no ties

to all 22 possible ties. Low density represented individuals received few or no services, versus a

high density that showed many services received by individuals. Degree centrality was added as

the "number of services he or she received, and the degree of the service reflects the number of individuals who received the service" (Ditchman et al., p.146).

Lastly, a two-mode core-periphery analysis was conducted. The core modeled the individuals who shared more services and created a high density, and the periphery of individuals who had low density ties from services. Ditchman's analysis is represented in Figure 1 (p. 146). The figure illustrated that of the 22 possible services offered by VR, only six created a core network of services: "assessment, job placement assistance, counseling, job search

assistance, on-the-job-support, and transportation" (Ditchman et al., p. 147). These services were considered to be the core services. Data showed that of the 250 individuals who received at least five of these six services, 70% of their cases were closed successfully. Only 20% of 98 cases were closed successfully who did not receive any of the six core services. In short, as the number of services increased, so too, did the number of individuals with successful employment.

Figure 1. Network visualization depicting the connections between individuals and services received through the vocational rehabilitation system.
Note. A line between an individual and service (labeled) represents a service received. Graphic created using Gephi, Fruchterman-Reingold layout.

Ditchman found that the successful closure rate for individuals who received all six services was

87.8%. Those who received only one of the six services only had a 40% successful closure rate (p. 149).

It is extremely useful to know which of the 22 possible services from VR were most used, and which could combine to best serve individuals with ASD. While the authors addressed successfully obtaining and maintaining employment for 90 days, there was not further examination of the quality of the employment, job-satisfaction, or long-term retention of those hired (Ditchman et al, 2018). The usefulness of network analysis to demonstrate how VR services connected with students diagnosed with ASD was also helpful. However, this only showed a connection, and did not provide recommendations or methods or curriculum for a high school transition program. The quality of the six core services was also not addressed. Overall, the authors demonstrated the that network analysis can be a useful research approach targeting transition age services, specifically with the variety offered by VR.

VR services is one part of the transition from public school services to adulthood for students with ASD. Parental expectations for students as they transition into adulthood is one of the several factors to consider. Holmes, Kirby, Strassberg, and Himle (2018) listed improved communication skills, diagnostic severity, and socioeconomic status (as cited from Shattuck, 2012) as factors affecting the outcomes of students with ASD.

The purpose of the study had two hypotheses. Parents of students who had more severe symptoms of ASD coupled with lower intellectual functioning would have that expectations in areas of "financial independence, school attainment, independent living, and citizenship" (Holmes et al., p. 2927). Second, that the odds would be greater that the parents who had the higher the expectations for outcomes in adulthood for their student with ASD, "engaged in relevant preparatory activities when controlling for their youth's intellectual functioning, age,

gender, and household income" (Holmes et al., p. 2927). In other words, parents with higher expectations for life after school were more active in preparing their child to meet those outcomes.

Volunteer participants were found through two rounds of recruitment from autism support networks across the United States, and through the Interactive Autism Network (IAN). IAN is a database of people who are willing to participate in research related to ASD, which includes parents and people with ASD. Holmes, et al. (2018) selected participants using two criteria: the child was between 12-18 years old, and had a clinical diagnosis of ASD from a healthcare professional (p. 2927). There were a total of 298 participants from these criteria.

Holmes, et al. (2018) reported the following demographic information about the parents. The majority were white, and female, with an average age of 46 years. Nearly 80% of parents were married or in a committed relationship, and over ⅔ reported living in a suburban setting having an average income of $80,000-$89,000. There were no notable difference in parental education levels, income, or religiosity (p. 2927).

The majority of parents reported that their children were white and male (157 males to 141 females) with 96% having started puberty. Seventy six point eight percent of students were diagnosed with either ASD or Asperger's. The remainder had a diagnosis of pervasive developmental disorder-not otherwise specified, or PDD-NOS, and had an average age of 14 years. Two thirds of the students had an IQ in the average or above average range, and nearly the same number attended public school. The Social Responsiveness Scale-2nd edition (SRS-2) scores for the group were between 60-90; the range for ASD diagnosis is 60-75. The majority of the students (69.8%) were identified in the severe range on the SRS-2 (pp. 2927-2928).

The parents completed a survey for all aspects of the study. In parental expectations section, the parents rated 25 outcomes on a Likert scale. Total parent expectations (TPE) were "summed to create a variable indicating total parent expectations" (Holmes et al, p. 2028). The maximum possible sum was 125, with parents averaging 84.14. The 25 expectations included by Holmes et al. had items such as: live independently, success in school, and be a good citizen. Sexuality concerns included accidental pregnancy, rape, and sexual assault (as cited by Matua and Dimitrov, 2001; Ivey 2004).

To analyze the data, Homes et al divided the IQ ranges into three categories of average or above, borderline, and below 70 (p. 2929). For the first aim, linear regressions were conducted with the characteristics of the students against the expectations of the parents. For the second aim, chi-square tests were conducted to identify "differences in preparatory activities by gender and intellectual functioning, with post-hoc examination of standardized residuals for variables with more than two groups" (Holmes et al., p. 2929). With both aims, exploratory analyses were conducted to determine whether other characteristics could account for how parents observed the activities of male and female students.

Holmes, et al. reported the following results from youth factors to predict the expectations of parents. The first model used IQ, total score of the SRS-2, gender and age of the children, and parental income to predict parent outcomes. The results showed that parents had higher expectations for students with average IQ, and had lower expectations for students with IQs that were under 70. A higher SRS-2 score also predicted lower expectations from parents. Parents also expected more from male children than from females. Neither the ages of the children nor parental income predicted any change in parental expectations (2018).

The second portion of the first aim was to conduct linear regressions with total SRS-2 score, gender and age, and income. Holmes, et al. (2018) used this to predict expectations in four areas. Like the first aim, income did not predict expectations, and neither did gender in this analysis. Expectations were lower with the combination of low IQ and a higher SRS-2 score. Expectations were higher for children with a higher IQ across all four areas except with citizenship expectations. The age of the children was only significant in school attainment, whereas an older age lowered expectations for achievement in school (Holmes et al., p. 2929).

The second aim divided the children into two groups based on gender and IQ to analyze what activities parents have done to promote job and independent living skills. Holmes et al found that compared to their female counterparts, males were more likely to work or volunteer, to have discussions about the future and about voting. However, females were 10 times more likely to be enrolled in home economic and independent living courses. Regardless of gender, a higher IQ predicted higher likelihood of work or volunteering, and parents that had discussions about voting and civic engagement. The opposite was predicted for lower IQ students in the same situations. However, students with borderline IQ were the most likely of all three IQ categories to have responsibilities or chores at home (Holmes et al., p. 2930).

The information on parental expectations of students with ASD is extremely useful, as there is a need for increased research into this area. However, the authors were forthright and very clear that the gender proportions in the study do not accurately reflect documented ASD rates between genders. To garner information about both genders, this imbalance was a necessity. The proportions of urban/suburban/rural residents also did not reflect the proportions of the general US population, and was tilted heavily towards suburban households.

The Holmes, et al. (2018) study concluded that parents of children with ASD and lower IQ, had lower expectations for transition areas, with the inverse true for those with at least average IQ. Parents of daughters with ASD reported lower expectations than those with sons, even "when controlling for IQ, autism symptom severity, and age" (Holmes et al, 2932). While not fully discussed, Holmes, et al. (2018) mentioned concerns about students with ASD and sexuality. Sexuality is a neglected area in the education of students with ASD.

Research in the area of sexuality has been neglected in the ASD population for several reasons. Ballan and Freyer listed three reasons for this. Professionals are not comfortable talking about sexuality. Persons with ASD have no interest in sexuality or intimate relationships. The incorrect belief that ASD is a syndrome that is restricted to only to childhood (pp. 261-262). Moreover, the research that exists on this topic, is more focused on behaviors of sexuality, not how to emotionally or socially cope with or navigate the many issues of sexuality. Without guidance in the areas of sexuality, Balland and Freyer argue that students with ASD are at an increased risk for negative outcomes by internalizing negative social stereotypes. Not least of these possible outcomes is pregnancy, or even involvement with the law.

Balland and Freyer argued using a proactive approach with three strategies from the "Growing Up Aware with Autism Sexuality Education Curriculum" and their examples. The three areas were: "applied behavior analysis [ABA], social stories, and social behavior mapping" (p. 264).

In an example to help teach a student about not masturbating in public, ABA was used as an intervention. Ballan and Freyer argued that in order to ensure normative sexual behaviors, and the safe and acceptable expression thereof, a proactive approach to sex education was necessary (p. 265).

ABA instruction was used in the case of Kevin, an eleven year old who masturbated one time, every day at recess, as determined by baseline data. The data showed that if the swings were fully occupied, Kevin would first touch himself over his clothes, and then put his hands down his pants. Removing Kevin to the restroom was not an effective intervention. Instead, visual strategies to taught "private time" using a picture of Kevin's bedroom to help teach the concepts of public versus private, and where/when masturbation was acceptable. Additionally, if the swings were occupied, Kevin was redirected to the carousel or see-saw that to stimulate tactile movement. This was a successful intervention for Kevin.

Girls with ASD also need individualized intervention for sexuality education. For girls with ASD, Ballan and Freyer stated that they need to have information about menstruation before they begin their first period. Compared to peers with cerebral palsy or Down's syndrome, Ballan and Freyer reported that girls with ASD were more likely to have behavioral issues at the start of menstruation due to social or communication deficits (Ballan et al., p. 267). The authors also recommended to use models or drawings to teach the proper hygiene skills (changing tampons and cleaning) as a part of social stories training for menstruation (Ballan et al., p. 267). It is important to include calendar-skills (number of days in a month and counting to 31) so that girls can prepare for and begin to anticipate their periods. Most importantly, with social stories, the needs of each student can be individualized to address sexuality education (Ballan et al., p. 267).

Another way to meet the needs of students is through social behavior mapping (SBM). Through a literature review of 15 articles concerning students with ASD and social behavior mapping, Ballan Freyer concluded that this was an effective method to decrease targeted behaviors, and to increase preferred behaviors (p. 268).

In the example of SBM, the authors focused on hugging others at school as the target behavior. Students mapped expected and unexpected behaviors for giving a hug to classmates, as shown in Tables 1 and 2 (pp. 269-270) below:

Table 1 Hugging my classmates: behaviors that are expected

Expected behaviors	How they make others feel	Consequences you experience	How you feel about yourself
Keep my hands at my sides or on my desk during class	Comfortable	People feel okay being around me	Happy
Not touching others sitting near me or in the classroom	Relaxed	People want to sit next to me	Calm
Only hugging other people when they tell me it's okay to	Friendly	People respond to me positively	Accepted

Table 2 Hugging my classmates: behaviors that are unexpected

Unexpected behaviors	How they make others feel	Consequences you experience	How you feel about yourself
Touching others when I am supposed to be sitting at my desk with my hands to myself	Annoyed	Others get angry at me	Unhappy
Hugging other students during class	Uncomfortable	Students tell me to leave them alone	Embarrassed
Hugging students without them asking me to	Disgusted	Students tell me I'm weird	Ashamed

The idea behind mapping out 'expected' and 'unexpected' behaviors is that "the idea that such behavior is 'inappropriate' may be foreign. A Social Map for this situation establishes that hugging others without their permission is 'unexpected'" (Ballan et al., p. 269). Mapping out behaviors helps to put behavior into context, and to put context into hugging.

These three techniques are beneficial because they can be "generalized to different topics and situations" (Ballan et al., p. 270) in order to meet the needs of individual students. The authors also discussed the particular needs of girls with ASD who are neglected in the research

twice, once by having ASD and second by their gender. Most of the research is focused on non-disabled adolescents and males.

In addition to the ABA, social stories, and social behavior mapping, an additional technique for social skills is the Adolescent and Young Adult Activity Card Sort (AYA-ACS). McCollum, La Vesser, and Berg (2015) used the AYA-ACS in activities with students with HFASD of transition age. The AYA-ACS used captioned photographs to gain knowledge personal barriers in order to increase social participation. McCollum, LaVesser, and Berg (2015) stated that when "empowering the young adult with an ASD to complete the AYA-ACS and identify his or her own barriers to participation, a unique profile is obtained that can lead to the creation of personalized interventions" (McCollum et al., p. 989). In other words, the AYA-ACS gave students the opportunity to identify areas of weakness, allowing teachers or staff to create an intervention to remediate the weakness.

McCollum, et al. outlined the purpose of the AYA-ACS. She sought to describe the participation patterns of a group of young adults with HFASD, and compare the self-reported responses to those of caring adults who worked with the individuals. The comparison would help determine the feasibility and utility of the AYA-ACS to guide instruction and interventions. Lastly, the authors also hoped to describe barriers to participation from the perspectives of the young adults (p.989).

The authors recruited 24 young adults all with either a clinical diagnosis of ASD or Asperger's. All of the participants had a verbal IQ score of 70 or above based on the Wechsler Abbreviated Scale of Intelligence, Second Edition (WASI-II); the average verbal IQ for the group was 100. Eleven of the participants reported comorbid disorder of ADHD, anxiety, or bipolar disorder. The participants ranged from ages 18-25 with an average age of 20. Majority

were male (71%), white, and at the time of the study, 87% lived at home. The participants also needed to have English language abilities at a minimum of a fifth grade level, and to have been in the mainstream general education setting during high school. Ten subjects reported part-time employment, and none reported full time employment. Lastly, a caring adult described the subjects' daily activities from their perspective. All caring adults were over the age of 30, majority (21) a parent of the participant, and 23 female (McCollum et al., p. 989).

All participants were recruited from one, large city located in the Midwest. Participants were administered the WASI-II, AYA-ACS, and completed a 24-hour activity log in a location of their choosing that lasted for 1 hour. In reference to the participants, the caring adults also completed an AYA-ACS in addition to the SRS-2 and the Vineland Adaptive Behavior Scales-Second Edition (Vineland-II) (McCollum et al., p. 990).

The AYA-ACS consisted of 70 different activities that were represented with photographs. There were seven domains, each with two activities. Additionally, there were two domains of perceived barriers to participation, each with three activities. To administer the AYA-ACS, the participants were first asked to sort the photographs into yes/no piles indicating whether or not they participated in the activity within the past six months. The 'no' pile was then sorted into two more piles, representing "I am interested" or "I am not interested". Next, from the 'no' and 'I am interested' group, participants were asked to choose from a list of potential barriers (McCollume et al., p. 990).

The results of the SRS-2 showed an average score of 66, within the 60-75 range of mild-moderate ASD diagnosis. The Vineland-II standard scores were below 85 in each domain, which is the low to moderately low rage (McCollum et al., p. 991). Of the seven domains for the AYA-ACS, results were gathered from six, as one of the domains was 'parenting' and none of the

participants was a parent. McCollum et al. recorded the activities completed by 100% of

participants reported in the past six months. Participants watched tv, listened to music/the radio,

completed personal hygiene, and followed workplace rules (p. 991). The authors reported "the

least engagement in signing a lease, paying bills, dating, being in a long-term relationship, and

keeping personal health records" (McCollum et al., p. 992). Barriers reported by the participants

included "feeling scared, no transportation, attitudes of others, no one to do it with, never having

the chance, and too busy" (McCollum et al., p. 992). Additionally, from McCollum et al.'s

review of the 24 hour activity logs, the majority of the participants reported solitary leisure time,

and work/school. Of the 26 participants, only four logs reported social activities (p. 992).

McCollum, et al. reported that AYA-ACS results from caring adults showed that

participants engaged in more: eating healthy, attending spiritual concerns, relaxing, and using

study skills or completing homework than the individuals self-reported. The scores from the

SRS-2 and the caring adult AYA-ACS were analyzed with a Chi square comparison using the

values from the SRS-2 rated as 'mildly interfering' and 'moderate to significant'. The results

from each domain on a high/low participation of the AYA-ACS showed no statistical difference

for either the individuals or caring adult. There were no significant relationships identified on

young adult responses from the AYA-ACS compared against each of the four domains of the

SRS-2. However, with the caring adult, there was a significant relationship between the

education domain of the AYA-ACS, and two domains of the SRS-2, social motivation and social

communication (McCollum, et al., p. 993).

The Vineland-II scores from caring adults were analyzed with Spearman Rho correlations

to AYA-ACS responses from young adults. McCollum, et al. found a moderate strength positive

correlation between the Vineland-II Communication and with each the AYA-ACS Health and

Education domains. Moderate strength correlations were also noted between communication and social participation, and communication and work (pp. 993-994).

There were four main takeaways from the McCollum, et al. research. One, leisure received a high and consistent level of participation while a low participation rate was found in the social and education domains with the AYA-ACS. In other words, the young adults were more focused on leisure activities that were solitary and they did not take steps towards participating in more social activities. Two, the discrepancy between what the caring adult and the young adult reported in some areas suggested that parents and their young adult need to have more conversations about transition plans and education to more accurately reflect the young adult interests. Three, decreased social participation was identified and needs to be addressed. The participants "most frequently identified social activities as, 'not participating in but having an interest in'" (McCollum et al., p. 994). The desire to interact was noted, but subjects lacked the social skills to act on their desires, which leads to the fourth takeaway. Even though several of the participants worked part-time or were in school, they "did not appear to convert this into social opportunities" (McCollum et al., p. 994). Though they had daily social opportunities, they did not engage. McCollum, et al. reported that through this research the initiation of social interactions was highlighted as a consistent difficulty for young adults.

The study was limited in its geographic scope by being located in one, Midwestern city, thus including participants primarily white and urban. However, the results highlighted the need to consider transition needs and social skills training when participants are young. There was a very clear need for intervention and skill building, particularly in the area of initiating social interaction. It also demonstrated how the AYA-ACS was used to determine participation and barriers from a student's perspective, and to involve them in ownership of both.

The value of input from students and encouraging them to take ownership of their transition needs cannot be understated, particularly in the area of social skills. According to Nasamran, Witmer, and Lee (2017) students with ASD are less likely to live independently after high school than students with other disabilities (p. 343). Nasamran et al. (2017) added that the "emphasis on academic achievement may lead to a reduced focus on social skill instruction, which may be especially important for students with ASD" (p. 343). Given that a defining characteristic of ASD is social skill deficits, it deserves the same attention as academics.

Building upon the previous research of Chiang, Cheung, Lie, and Tsai (2012), with four research questions, Nasamran et al. (2017) sought to explore social skills and academic achievement as predictors of post-secondary success for students with HFASD (p. 344). The four questions Nasamran et al. posed considered what extent academic achievement and social skills in high school: 1. predict post-secondary enrollment or graduation; 2. predict post-secondary employment; 3. predict overall success; and 4. predict independent living (pp. 346-347).

The data used by Nasamran et al. was collected as a part of the National Longitudinal Transition Study-2 (NLTS2), a large, nationwide research project conducted by the US Department of Education. The NLTS2 gathered data five times from the years 2001-2009 from randomly selected schools across the nation. From this, Nasamran et al. made an initial data set of students ages 13-16 at the start of data collection. Students were in at least the seventh grade, and were ages 21-26 at the final data collection time (Nasamran et al., p. 347).

From the initial NLTS2 data group, a subset of 170 who had a primary disability of ASD were selected. Nasamran, et al. listed the following characteristics of students included in their sample: 80% male, 90% white, at the start of the study 50% were 13-14 years old, and the household income for 60% of the students was $50,000 (pp. 347-348).

Nasamran et al. used multiple assessments across the four areas. To assess academic achievement, standard scores from the Woodcock-Johnson Tests of Achievement III (WJ-III) were used in four sub-test areas: Passage Comprehension, Applied Problems, Social Science, and Science. Social Skills were assessed using scores from parents based off of the three areas of the SRS-2: assertion, self control, and cooperation. Post-secondary success was defined as actively enrolled in, or graduated from a post-secondary institution. Those who attended and dropped out, or intended to enroll, were not considered. Employment success was defined as a paid job that occurred after high school graduation, and within two years of an interview by the authors. Overall success occurred if the student had either post-secondary or employment success, or both. Lastly, independent living was defined as not living with parents or in designated care (pp. 348-349).

Compared to their same aged-peers, Nasamran et al. reported that the WJ-III scores averaged in the low-average range for the group. The SRS-2-based questions from parents averaged a score of 11.6, which meant that parents sometimes saw their child engaged in appropriate social skills. Across several fields, 60% of the group experienced post-secondary success, with 40% having experienced employment success, and 15% were living independently (p. 349).

For both post-secondary and employment success, the models shown by Nasamran et al. were statistically reliable. Both models indicated socials skills as a predictor of success. Holding academic achievement constant, Nasamran et al. reported that a student with ASD was 13% more likely to be successful. By holding social skills constant, the same individual was 5% more likely to be successful (p. 350). Additionally, Nasamran et al. reported that "individuals with ASD were 1.15 times as likely (15% more likely) to experience employment success" (p. 350)

for every one unit increased for social skills, with constant academic achievement. Nasamran et al. reported similar results from the model of overall success. With social skills constant, students were 4% more likely to experience success, and with academics constant, students were 25% more likely to experience success. Each improvement represented one unit of social skills improvement, however, this model suggested a weak relationship (p. 351).

The three analyses showed that in two of the categories for success, post-secondary and overall, academic achievement was a significant predictor of success. In all three models for success (post-secondary, employment, and overall) social skills competence was a significant predictor for individuals with HFASD. Nasamran et al. made two points in regards to the results of their models. One, that direct and explicit instruction should be utilized as an effective instructional tool for students with HFASD to promote academic growth and ability for success after high school (p. 352). Two, since social skills were significant in all three areas, "it is crucial that students with ASD are provided with effective instruction to learn how to improve their social interaction skills" (Nasamran et al., p.354). Improvements in social interactions should target the workplace and/or how to navigate through post-secondary education, and be discussed as a part of a transition plan.

Analysis for independent living was not conducted due to the small number of participants who met criteria. Also, the authors only examined success for the students within a small window of high graduation, therefore there was no long-term examination of success. To have post-secondary success meant only to be attending a post-secondary institution. The focus was that a student was enrolled, not performance. However, the study clarified the need to provide correct academic instruction to move students with HFASD towards academic success. Additionally, it emphasized the need not only for increased social skills instruction, but to also

target social skills needed for life after high school graduation, such as work, school, or a combination.

Employment looms large in life, with or without post-secondary education. Gloria Lee and Erik Carter (2012) noted that for students with ASD, compared to non-disabled peers and peers with other disabilities, aspirations for work and education were comparatively unfulfilled. Lee and Carter also stated that only half of students with ASD ever gained work experience while in high school (as cited by Wagner, Newman, Cameto, Levine, & Marder, 2003) and fewer than 15% ever held a summer job. More jarring, Lee and Carter cited from Newman et al. (2011), that eight years after high school graduation, only 37.2% of graduates with ASD were employed, and 63.2% held some form of job since graduation (p. 989). Additionally, those who were employed tended to be underemployed (working part-time or paid minimum-wage).

To address these deficits in post-secondary employment for students with HFASD, Lee and Carter reviewed specific components and supports for students with HFASD that contributed to successful transition from high school and led to meaningful employment (p. 989). Lee and Carter identified four factors that affected employment for students with HFASD. One, not all students with HFASD were eligible for Vocational Rehabilitation (VR) services. Second, the emphasis placed on academics over other transition areas, particularly employment. Third, lack of social skills training to navigate through the employment application and job search process. Fourth, academic goals over-emphasised the importance of post-secondary education, and under-emphasized employment (p. 990). While academic skills are important, "academic capacities represents only one aspect of what will help them [students] succeed in the workplace" (Lee & Carter, p. 990). In other words, it is of no benefit for the student to have academic skills, if they do not have the social skills to navigate the workplace or outside of school.

Lee and Carter listed seven areas that improved employment success: 1. transition services based on individual strengths; 2. Early work experiences; 3. collaboration with other agencies; 4. Inclusion of family support and expectations; 5. targeted independence; 6. social skills training that incorporated employment skills; 7. job-related supports (pp. 990-991).

A student should not only attend the IEP meeting, but actively engage in it in order to develop transition services that are individualized to areas of strength. Lee and Carter reported that students with ASD typically do not attend, or actively participate in their IEP meetings. An IEP meeting is an ideal time to discuss and encourage work experience and to collaborate with other agencies, such as VR. Employment during high school helps expose students to new experiences, develop realistic job-related expectations, and predict increased positive outcomes after graduation.

Lee and Carter (2012) echo what has been previously discussed by Holmes et al. (2018) that parents' expectations exerted a strong influence on student outcomes during and after high school. Lee and Carter (2012) expounded upon fostering independence with students, since "accommodations in the workplace and post-secondary educational settings must be initiated by young adults with disabilities" (as cited from Chappel & Sommers, 2010). To increase independence and self-advocacy, Lee & Carter suggested: 1. starting earlier, not later, and in all environments; 2. practice and support in the employment settings; 3. skills taught in advance of transition planning; 4. support in the classroom and on the job; and 5. independence assessed continually throughout high school (p. 994).

Regarding social skills training that fosters employability, Lee and Carter summarized five main points. One, that work-related instruction should be imbedded within the social skills curriculum. Two, the use of evidence-based instruction targets priority skills. Three, context

needs to be considered for critical skills (different jobs have different social demands). Four, social skills should be taught in settings where the students will use them. Five, VR services or job coaches should be utilized whenever possible for job-related social skills (p. 995). All of these fed into job-related supports, such that when a student experienced job satisfaction, and socially navigated the workplace, fewer supports were required.

Throughout this literature review, the research from Lee and Carter supported the need for social skills to focus on transition skills. For students with HFSAD, social skills were not less important than other academic skills, and academic ability should not be mistaken for social ability.

Social Stories

Group social skills interventions (SSI) was a common method of teaching ASD students social awareness strategies. In their meta-review of SSI interventions for adults with ASD, authors Spain and Blainey (2015) reported from Kaat and Lecavalier (2014) five core themes of SSI: "(a) to improve core socio-communication impairments…(b) to increase quality and quantity of peer relationships…(c) to enhance emotion recognition and regulation…(d) to develop problem-solving strategies and/or reactions (e) to address secondary difficulties that can arise from core ASD characteristics…" (p. 875). Specific to their literature review, Spain and Blainey sought to assemble information about the effectiveness of group SSI for adults with HFASD (p. 875).

The article review included a study focused on adults aged 18 and older diagnosed with any definition of an ASD, including Asperger's. Studies that included comorbidity with ID were excluded. The articles were to be empirical, peer-reviewed English publications. Lastly, the studies focused on group SSI, not individual SSI. With these criteria, 1,369 possible articles were

reduced with a total of five studies reviewed. Of these five articles, Spain and Blainey clearly stated that these studies "are best considered pilot studies" (p. 876) and should be considered with caution.

The participants in the five studies were 85% male with an average age of 25.8, ranging from 18-55 years old. All had average IQ's with the ASD diagnosis made by a qualified professional. No measures included or excluded any possible comorbid disorders or diagnoses, other than for ID as mentioned above.

The content covered by the reviewed articles varied. Aspirations, focused on vocational skills, and the Program for the Education and Enrichment of Relation Skills (PEERS) that focused on social relationships and networks. Aspirations and PEERS, along with two other studies, focused on friendships, social interactions, and problem solving in social interactions that might be challenging for ASD adults (Spain and Blainey, p. 877). One article reviewed by Spain and Bailey focused on the deficits in social interactions and covered the areas of "emotional understanding, understanding situations and integration of these skills into daily social situations" (p. 877). The last article reviewed was non-manualized, and built from input from the participants.

Varied methods were used by the different groups reviewed. Didactic teaching and group discussions were used across all five. Videos and homework were also utilized, as well as a Socratic model.

While some of the results were admitted as "questionable" by Spain and Blainey, since "the clinical significance of change scores for outcome measures was not described in any study" (p. 881), they were able to group results into four categories: "social knowledge and cognition, social functioning, anxiety and depression, and satisfaction with the intervention" (p. 881).

Spain and Blainey determined that SSI showed an improvement in the areas of social knowledge and cognition, even though the size of the studies was small. Specifically, SSI helped participants improve emotional recognition and empathy. PEERS addressed social functioning. PEERS was well-rated by care givers and participants. PEERS was the only article that demonstrated social interactions with people outside of the group. However, due to the social struggles attributed to ASD, the self-reported questionnaires of participants regarding social functioning resulted in questionable validity regarding participants' outside social interactions. Validity was either questionable or not clinically significant regarding the reported reduction in anxiety. Lastly, participants reported feeling positive about their SSI interventions.

When published in 2015, Spain and Blainey claimed that this was the "first systematic review, to our knowledge, to evaluate the effectiveness of group-based SSI, specifically for adults with hf-ASD" (p. 882). Spain and Blainey found three significant social areas of improvement from their review of SSI interventions. The first indicated an improvement in social knowledge and cognition. The second noted a reduction in loneliness and lastly, there was a possible reduction in anxiety (p. 882), a common attribute of students with ASD.

Karal and Wolfe (2018) completed a more recent social skills literature review for students with ASD targeting more data-based articles. The four requirements for their review included "(a) participants of the study were students with ASD, (b) the titles and/or abstracts contained the terms *social interactions, or communication skills, or social engagement, or prosocial behavior, or social communication, or socially appropriate behavior*, (c) the study was published in a peer-reviewed journal, and (d) the study was data-based and experimental" (Karal and Wolfe, p. 46). With these criteria, 325 articles published from 1993 to 2015 were reduced to to 12.

In addition to the four criteria, Improvement Rate Difference (IDR) was used to calculate effective size, and Scientific Merit Rating Scale (SMRS) calculated the methodological rigor. For IDR, Karal and Wolfe considered that scores from 0.70 to 1.0 represented large to very large effect sizes, 0.51 to 0.70 represented a moderate effect, and scores less than 0.50 indicated a small size effect. The SMRS was scored on a scale of one through five, with scores of three to five representing sufficient rigor regarding conclusions. A score of two indicated more research was needed, and scores of one or zero indicated insufficient evidence about possible benefits (p.47).

Across the 12 articles there were 31 total students, 27 males and four females, ranging from ages three to 12. Ten studies were completed in schools across various settings, with the remaining two conducted in research facilities. ASD severity varied across the articles, from severe to Asperger's Syndrome, though all participants had average cognitive abilities. Three studies included peers as partners in social stories. A total of 34 social stories were presented in a variety of modes, including computer, powerpoint, and written with or without pictures. One study included pictures of the classroom, students and peers.

Karal and Wolfe calculated the average effect size (IDR) to be 0.61, a moderate score. Scores ranged from 0.22 to 1.0, with eight of the studies scoring at least a moderate effect and four showing no effect according to the IDR score. The average SMRS score (rigor) was 3.41 in a range from two to four. Nine of the studies earned scores of 3 or 4, resulting in "a positive change in the behavior of participants" (p. 53).

Notably, Karal and Wolfe found that the four studies with significant IDR scores "all included visual components that differed from the other studies that used visual symbols as printed pictures with the text. These visual components (photographs of participants, peers, and

the environment; computer-presented social stories; and video feedback) appeared to be a more effective means of increasing social skills than written text alone or written text with printed pictures" (p.54). In other words, relevant and meaningful visual and and computer-based lessons from the environment of the student were likely more effective teaching tools.

Additionally, the inclusion of visual aids increased the access of social stories to readers of varying abilities. Karal and Wolfe found no difference in the effectiveness of social stories between poor readers and those at grade level (p. 54). With appropriate modifications, their findings suggested that social stories could be made accessible to students with different reading abilities.

While the results of the analysis are encouraging, the authors were clear to add that the results should be considered with caution. Neither of their analyses, IDR and SMRS, were statistically-based. Due to the selection criteria, there was also a small sample of articles reviewed.

Comic strip social stories represents one possible version of visual aids. Pierson and Glaeser (2007) used comic strip conversations interventions for three students with ASD who expressed feelings of loneliness and decreased social satisfaction, a common report amongst students with ASD. Similar to social stories, which are "written so that a student can experience a situation and 'rehearse' positive social behaviors, a Comic Strip Conversation utilizes pictures, rather than text, and can be used to review and discuss alternatives to a social situation" (Pierson & Glaeser, p. 460). Like a graphic organizer and other visual aids, a comic strip conversation is another possible visual aid to teach a student with ASD.

The study consisted of three elementary-aged students diagnosed with mild-moderate ASD, and who received over 50% of their instruction within a self-contained classroom. The

intervention was conducted by one special education teacher assisted by two paraprofessionals. The staff members received training on Comic Strip Conversations, and used the intervention for "students who exhibited the most severe lack of social skills" (Piersen & Glaeser, p. 461). The three students were identified during a two-week baseline data collection of observed verbalizations of loneliness, the desire to play with others in and out of the classroom, and appropriate conversations independently initiated by the student (p.461). The three students with the most negative interactions and observations were chosen.

Based on observations, ea target behavior was developed for each student using the comic strip intervention. Student names were not used, instead, each was called Student 1, Student 2, and Student 3. The target behaviors were to increase the use of hands and feet during games on the playground, increase eye contact and appropriate volume during greetings, and to accept responsibility for actions with an apology to peers (Pierson & Glaeser, p. 462).

Each student created a dictionary of eight icons from the Personal Symbols Dictionary, with additional icons and people included as needed. Comic Strip Conversations corresponded with four different times during the students' day, and used when needed. After a negative social interaction, students illustrated the people involved, the setting, and labeled their feelings resulting from the interaction. With teacher or paraprofessional support, positive outcomes and resolutions were suggested as alternatives.

To address the target behavior of each student after drawing the comic, at least one of the following questions was asked: "(1) Where were you?, (2) Who else was there?, (3) What were you doing?, (4) What happened?, (5) What did you say?, (6) What did others say?, (7) What did you think when you said that?, and (8) What did others think when they said that/did that?" (Pierson and Glaeser, p. 463, from Gray, 1994). These prompts allowed the student to guide the

conversation towards an appropriate social behavior. With staff assistance, the incident was reviewed throughout the remainder of the day.

At the end of the six-week intervention, Pierson and Glaeser found that the Comic Strip Conversation improved the reported loneliness and social satisfaction of all three students. Student one made a playground friend by the end of the six weeks, and increased his target behavior by 75%, which was the appropriate use of hands and feet on the playground. Student two progressed from greeting peers 0% of the time, to greeting them 50% of the time with eye contact and appropriate volume. Lastly, Student three improved taking responsibility and giving appropriate apologies by 66% and initiated peer interaction on the playground (p.464).

While this was an extremely small study of only three students designed by a teacher for the needs of her students, it demonstrated the potential usefulness of Comic Strip Conversations at the primary level. More research is needed for different age groups and for longevity, as this intervention was only six weeks.

In addition to drawing a social interaction, technology can be used to teach social interactions and is an increasingly common-used tool. Researchers Sani-Bozkurt, Vuran, and Akbulut (2017) involved parents, teachers, ASD professionals, and students to develop an interactive, multimedia method for teaching social skills to teenagers with ASD. Multimedia offers several benefits to teaching students with ASD. Because multimedia "triggers multiple sensory channels, the burden on a single channel is prevented which increases in the effectiveness of digital learning materials" (Sani-Bozkur, Vuran, & Akbulut, 2017, p.2). In other words, digital media learning can cast a wider information net to overcome the limits of short-term memory.

Another benefit of multimedia learning is that it allows for student interaction. Instead of watching a video or listening to a lecture, a student can interact with content in a variety of ways, both visually and auditorily. This can pique student interest and more effectively deliver content as it involves student interaction, and can accommodate multiple ways of learning. It provides the ability for students to start or stop the story at their pace, make different choices along the way, or go back to previous points in the program.. Additionally, multimedia allows for increased independence while learning and a trial-and-error approach to social interactions in a safe environment.

Through four phases of experimentation, Sani-Bozkurt et al. posed two research questions: "1. How should social stories be designed and presented in interactive media while teaching social skills to adolescents with ASD? 2. What are the views of participants regarding the usability of the interactive social stories?" (p. 3). The four phases were analysis, design and development, implementation and assessment, and changes made from findings and results. Each phase contained multiple steps within it.

Phase one, analysis, consisted of a literature review, needs analysis, and views from experts in the ASD field with a specialization in social story writing. The second phase was made of three cycles of remediation. The cycles started with development of social stories, followed by a pilot study with five students who had ASD, and lastly, student data was used in addition to input from teachers and caregivers. The third phase implemented the pilot study with four ASD students in a 'real learning environment' three different times. Lastly, changes were made according to the data collected with input from participants.

The results of the development of a multimedia social skills program showed that "interactive social stories were perceived as entertaining, reader-friendly, memorable and

engaging" (Sani-Bozkurt et al., p. 20). Additionally, feedback from parents, teachers, caregivers, and ASD experts was generally positive and helped guide the development of lessons that would be pertinent to students with ASD. Specifically, lessons were designed to be short, to the point, and as close to real-life as possible. The criteria conveyed the two lessons in a manner that students could understand over the course of two semesters. Given that this technique was only examined for two semesters and used only two lessons, the authors did not examine long-term effectiveness or the development of additional lessons.

In a hypothetical study, Isbell and Jolivette (2011) created a fictional student named Jake from a composite of students with whom they worked. The purpose of their hypothetical study was to demonstrate the use of the social story "Stop, Think, Proceed" (STP) for students with HFASD. Students with HFASD not only need social skills training, but they also need an ability to solve immediate problems independently around them in a manner that is socially acceptable and effective.

The STP strategy was based on the self-regulated strategy development (SRSD) approach. Traditionally a writing intervention, SRSD is adaptable to any cognitive strategy. SRSD is based on six stages: "(a) developing and activating background knowledge, (b) discussing the strategy, (c) modeling the strategy, (d) memorizing the strategy, (e) supporting the strategy, and (f) independent performance of the strategy" (Isbell and Julivette, p. 33 from Graham, Harris, & Mason, 2003). Following these six steps, a strategy to use STP was developed.

Prior to the six steps, visual aids were created that showed each step of STP with a brief description. An emotion thermometer was also created with levels from one to three (or mild to strong responses). Jack also created a graphic organizer of ways to solve social problems, in

addition to his teacher-created social scenarios on index cards. These steps were used to prime Jack for learning STP through the six SRSD steps.

Each of the SRSD steps involved scaffolding practice to encourage Jack to find socially acceptable and effective solutions, with positive reinforcement from his teacher. The strategy started with brainstorming different scenarios were Jack would need to use STP, such as an unexpected change in the classroom schedule. The next steps involved discussing how to cope with the change and the teacher modeling how to use STP. Jack then worked on memorizing of the strategy and the emotional thermometer was introduced. Jack was instructed to take a break when he reached a level two or three on the emotional thermometer, and was taught the socially appropriate phrases to use. Lastly, to show independent ability, Jack's teacher presented him with different scenarios about when to use STP. He was given a card with "Stop, Think, Proceed" printed on it to use a reminder to implement the strategy.

Teaching social problem-solving skills is an important piece of overall social skills instruction. Not only does it encourage and teach independence, but "it also expands opportunities for students with HFASD to experience success in personal relationships, college, and a career" (Isbell and Jolivette, p. 37). In other words, teaching problem solving skills is a way for students with HFASD to make practical, life-long generalization social skills.

Teaching students to solve problems in a socially acceptable manner compliments social competency. Social skills competence is important to both students with and without ASD, however deficits in social competency is considered "a core feature of ASD" (Strichter, Randolph, Gage, & Schmidt, 2007, from McConnel, 2002; Volkmar, Paul, Klin, & Cohen, 2005). Due to a lack of research on social competency, the authors included articles for students with and without ASD in their review.

With seven search criteria, 100 possible articles were reduced to 16 deemed appropriate, of which, eight were included in the review. Across these eight articles, Strichter et al. (2007) found eight common target behaviors: functional communication, social initiation, cognitive development, play and group skills, response and engagement, challenging behaviors, self-related behaviors, and physical-motor skills (p. 224).

With these eight target behaviors in mind, eight key features of effective programs were briefly summarized by Stitcher et al. The first intervention included individualized goals and plans for the student, which accompanied the second goal to improve interactions with same-age peers'. The third, was a plan based on a specific evaluation or assessment. This bifurcation included: communicative intent and deficits versus new skills. The fourth, included social interactions in school and other settings within the community, which complemented the fifth, generalization of skills. Generalization included the need to self-regulate. Six, students identify environmental supports needed to perform (seven). Lastly, students needed family support.

While not an exhaustive or in-depth literature review, Stritcher et al. documented important recommendations listing target behaviors and features derived from documented effective programs. Additionally, it was noted that social skills training affected not only students with ASD, but their general education peers as well. A universal design approach could teach social skills to both students with ASD and "15% of the general education population of school-aged children" (p. 229) who also struggle with social skills.

Peer Groups

Symes and Humphrey (2010) examined the frequency of bullying experienced by students with ASD due to social inclusion struggles and peer acceptance. Students with ASD were compared to two groups, a control group of students with no identified special education

needs (SEN), and a group diagnosed with dyslexia (DYS). Dyslexia was chosen as a comparison special education group for four reasons. One, like ASD, dyslexia is a disorder on a spectrum of abilities and needs. Two, the ratio and incidence of ASD and dyslexia in boys and girls is very similar. Three, ASD is primarily a social disorder and dyslexia is primarily a cognitive disorder, which offered the opportunity to compare primary struggles. Lastly, other special education labels were rejected due to possible overlap with ASD and lack of clarity (e.g., EBD or intellectual impairments).

A total of 120 students participated in the study in three groups of 40: ASD, dyslexia, and a control group with no identified special education needs. The northern England students attended secondary schools. All were programmed in the mainstream general education classroom settings. The study did not list the participants' specific ages, race or ethnicity, nor the specific ratio of boys and girls. However, an analysis of variance (ANOVA test) was performed to verify no statistically significant differences among the groups based on gender or age. Students completed the My Life in School Checklist (MLSC) and Social Support Scale for Children (SSSC) surveys, while their tutors completed the Social Inclusion Survey (SIS).

The results showed that students with ASD experienced lower rates of social inclusion and acceptance, and higher incidences of bullying compared to the non-disabled control group and the students diagnosed with dyslexia, both individually and as a group. Students with ASD could also be grouped with their non-disabled peers who shared similar social deficits.

Grouping students with ASD with their peers could have several benefits, as described by Radley, O'Handley, Battaglia, Lum, Dadakhodjaeva, Ford, and McHugh (2017). Social skills training in this format improved the training of skills, as it allowed for peer modeling, but could also do so in an efficient manner as an inclusive group removes multiple disability categories.

Additionally, Radley et al. stated that this grouping "may be useful in promoting acquisition and generalization of target social skills" (p. 236). In other words, including a non-disabled peer who shared the same or similar social deficits, helped to both acquire a skill, and helped to ensure the use of the skill outside of training.

The authors posed four questions regarding including non-disabled peers in socials skills with elementary students using the *Superheroes Social Skills* curriculum. Question one, during probes did '*Superheroes*' improve the accuracy of targeted skills? Two, did the improvement of targeted skills become generalized? Three, did parents/guardians rate any improvement of social skills from the use of '*Superheroes*'? Four, did '*Superheroes*' result in parent/guardians reporting decreased in stress at home (Radley et al, pp. 237-238).

Five children were selected for the study, three diagnosed with ASD by a psychologist, all boys and aged five. The other two children had no diagnosis of ASD or any other disability. From parent input, both were considered to have language skills appropriate for their age, which was 4.5 years.

All probes were videotaped, and conducted in a clinical room. Training skill probes were conducted twice per session, and the number of probes ranged from to two to six, depending upon the child. Generalized probes were similar, but conducted by the parents. To determine the targeted skills each parent completed the Autism Social Skills Profile (ASSP), before baseline data was collected. At the end of the interventions, the ASSP was again completed again. Parents also completed the Parenting Stress Index: Short Form (PSI/SF) before and after interventions (Radley et al, p. 240).

The benchmark for targeted skill proficiency was 80% proficiency by participants. This was chosen over 100% to prevent repetition of lessons if one participant did not demonstrate

mastery. From the initial ASSP results, four targeted skills were selected from the '*Superheroes*'

curriculum. The four targeted skills selected by Radley et al. were "Body Basics..., Participation,

Wants and Needs, and Beginning a Conversation" (p. 243). Graduate students working under

Radley et al. taught the four targeted skills in two 1.5-2-hour sessions per week, for five

consecutive weeks (p. 243). Maintenance probes were conducted prior to training sessions, and

generalization probes followed.

The baseline data collection skill accuracy data for all targeted skills for each boy was: 0-

7%, 8-40%, 6-23%, 0-20%, and 0-5%. Baseline generalizations probes ranged from 0-67%.

During intervention, skill accuracy for targeted skills ranged from 30-96%, and generalization of

the skills ranged from 28-100%. Maintenance probes for target skill accuracy for each boy were:

33-46%, 63-100%, 73-88%, 73-94%, 72-78%, with generalization probes ranging from 33-100%

(Radley et al, pp. 247-250).

Radley et al. documented improvements in social functioning from the completion of the

ASSP. For all five children, Total Social Functioning improved, and for all but two of the

children, Social Reciprocity and Participation categories also improved. In the subcategory of

Detrimental Social Behaviors, improvement was only noted in one (p. 252).

Lastly, parental stress scores from the PSI/SF improved in three of the four subcategories.

Except for one child, who significantly improved, minimal change was noted in the subcategory

of Parent-Child Dysfunctional Interaction (Radley et al, p. 254).

Overall, the research of Radley et al. was consistent with similar research for school-aged

children who followed the '*Superheroes*' curriculum. Of the three children diagnosed with ASD,

two had demonstrated proficiency in target skills by the end of the intervention, with one failing

to do so. During generalization probes, two of the three children with ASD also demonstrated

substantial improvements in the accuracy of the targeted skills. Additionally, the inclusion of peers with shared social deficits, resulted in increased accurate skill demonstration by the peers throughout the study, which the authors argued "provides additional evidence to support the use of social skills training to simultaneously address the social behavior of children with ASD and peers with shared social deficits" (Radley et al., p. 256).

While this research shows the potential benefits of the '*Superheroes*' curriculum and the inclusion of peers for social skills training with students who have ASD, the study did not have long-term results after the 5-week maintenance probes. This was also a small study of five, four and five-year-old children, of whom three diagnosed with ASD.

Researchers Kasari, Dean, Kretzmann, Shih, Orlich, Whitney, Landa, Lord, and King (2016) examined social skills groups of students with ASD, against a group of students with ASD that included non-disabled peers, or neurotypical children in grades one through five.

Compared to neurotypical children, students with ASD have a smaller social circle, with fewer friends and social interactions. Kasari et al. reported children made friends by a combination of propinquity (proximity) and homophily (common characteristics) (p.171). For students with ASD in an inclusion classroom, this combination was difficult to achieve as inclusion does not necessarily increase friendships since there may be no other students with ASD in the inclusion class.

Friendships may not develop within inclusion classes due to a lack of proximity throughout the school day or outside of school. Kasari et al. developed two social skills groups, one where the ASD student worked with classroom, versus a small group of students with ASD from across several classes. This grouping would determine whether the group composition affected social outcomes (p. 172).

One hundred forty-eight, six to 11-year-old children in 120 different classrooms were enrolled in the study over the course of two years, in four cities (Los Angeles, Baltimore, Seattle, and Ann Arbor). Students were divided into two groups, *Engage*, 82 participants and *Skills*, 66 participants. The skills intervention (ASD only students) followed a traditional, didactic, social skills training model, whereas the engage intervention involved peers and a student with ASD which was based on shared activities or games. Both interventions occurred twice a week for eight weeks (16 sessions total) and eight weeks later for maintenance probes.

Kasari et al. used the Friendship Survey, which assessed friendships and networks within the classroom (p. 174) as the primary outcome measure. The survey was administered three times throughout the study: before intervention, within two weeks of the end of the intervention, and six to eight weeks later for maintenance. The survey was used to calculate the Social Network Salience (SNS) which described the social prominence of a student within the classroom across time. (Kasari et al., p 175).

Additional measures included playground observations that were conducted four or five times per year with the Playground Observation of Peer Engagement (POPE), and nominations of friendship from the Friendship Survey. This included nominations of a student as a 'friend' by the student with ASD, and peers nominating a student with ASD as a 'friend'.

The last two measures used were the Student Teacher Relationship Scale (STRS) and the Social Skills Improvement Systems (SSIS). The STRS measured how the teacher perceived their relationship with specific students. Kasari et al. used the SSIS measure to assess the areas of "social skills, problem behaviors, and academic competence" (p. 175).

For the primary measure, the Friendship Survey, both groups of students reported improved SNS scores, but for different reasons. In the *Skills* group, students who had significant

improvements reported less teacher closeness, or higher conflict. Whereas in the *Engage* group, students who recorded higher teacher closeness significantly improved their SNS scores (Kasari et al, p. 176).

Regarding additional outcomes, students in the skills group made improvements with playground engagement, decreasing their time in isolation, and increasing overall social engagement. However, given that only six students at one of the sites in the skills group remained in the study through the end of interventions, the authors noted that caution should be used with these results. Friendship nominations showed no change following the interventions in either group, either by the student with ASD or by their nominating peers. The SSIS and STRS results concluded that students who had low closeness and high behavior scores made the largest gains, provided they were in the skills group. However, this improvement was not sustained.

Limitations of the research include that 10% of the students left the study during the intervention phase, and up to 50% of the students left during follow-up. Despite those limitations, Kasari et al. stated that "contrary to our expectations, then, these data suggest that an adult-led didactic social skills approach was more effective for improving peer acceptance and engagement on the school playground than a naturalistic, activity-based intervention for children with and without ASD from the same classroom" (p. 177). While the authors offered caution in interpreting some of the results, overall, the traditional, social skills training showed more improvements over the two years than the activity-based intervention. A reason offered for this difference was that the skills group provided explicit, direct instruction in social skills.

The direct instruction of social skills is an important part of the education of a student with ASD. Given the trend of teaching students with ASD and other disabilities in inclusion classes instead of a separate resource room, explicit social skills instruction is more important.

The balance of social skills and inclusion can be difficult to find, as Landor and Perepa (2017)

found "that students on the spectrum prefer to spend unstructured times in a safe, quiet

environment which can be considered by some as contrary to the aim of social inclusion" (p.

131).

The perceptions of staff and parents are two factors that can affect inclusion. Student

success, or lack thereof, in large part depends upon the attitudes of these two groups. Landor and

Perepa (2017), from Emam and Farrell (2009), found that teachers' perception about inclusion

was based upon the support within the school (p. 132). Additionally, parents experienced

satisfaction when school staff were, empathetic, responsive to needs, and flexible (as cited from

Whitaker, 2007).

Based upon these concerns, Landor and Perepa asked three questions about inclusion of

students with ASD. One, what practices are in place to address social inclusion, not just

academics? Two, how do school staff perceive the social experience of their students with ASD?

Three, how do parents perceive the social experience of their child in school (pp. 132-133)?

Landor and Perepa identified five themes with a thematic analysis: "learning social skills, a safe

place, peer awareness of children with Asperger syndrome, LSA [paraprofessional] support and

attitudes to inclusion" (p. 134).

Social skills were taught to all students with designated resource room time using a comic

strip curriculum. Responses showed that staff and parents supported social skills training as a

part of mainstream and social inclusion. Moreover, Landor and Perepa determined that the staff

supported a balance between explicit social skills training, and allowing social skills to develop

naturally through exposure by mainstream inclusion (p. 135). The authors added in the results for

'safe place' which showed that time spent in a resource room, may encourage social exclusion

for students who do not need the safety of resource room time.

The peer awareness results for ASD students posed a conundrum. On the one hand, the staff reported that same-aged peers had little or no understanding of the autism spectrum, but on the other hand, that increased awareness of ASD was an important factor in increased social inclusion. As one staff member reported, students with ASD were "often labelled with the weird, odd, and perceived as not cool to be friends with" (Landor & Perepa, p. 137). The 'cool' factor was also a part of the staff responses about children who received LSA support.

Some students with ASD assigned to an LSA, were aware of their difference from peers. However, as with peer awareness, the responses were mixed. Most of the LSA's in the school were aware of the possible stigma, and worked to minimize it by "being a general helper rather than being attached to the child" (Landor & Perepa, p. 138). In other words, blending into the classroom as another adult was key to minimizing stigma.

Inclusion responses from parents illustrated that parents perceived that the level of support at the school (inclusion, resource room, and LSA's) influenced on their school choice. As shown by Whitaker (2007), when given resource room time in conjunction with inclusion, parents tended to be more optimistic about their child's education (as cited from Landor & Perepa, p. 139). However, parents and staff were unsure whether resource room support and inclusion encouraged social inclusion of students with ASD. Staff were divided on whether inclusion was appropriate for all students with ASD.

While the responses in each of the five areas reflected previous research, Landor & Perepa focused their research on one school. They also did not include student input, however, LSA or paraprofessional input was included, and reflected the need for LSA's to blend into the classroom as another adult as much as possible.

Video Instruction

  Plavnick, Kaid, and MacFarland (2015), conducted a study with four students with ASD teaching social skills using video group instruction (VGI). With the increased access to technology and its' affordability, the use of video recording devices to teach social skills offered a new method for teaching. The authors proposed to replicate a previous study using video recordings teaching social skills within a public-school setting for students diagnosed with ASD-ID (Autism Spectrum Disorder-Intellectual Disabilities).

  The secondary purpose of the study assessed the generalization of learned skills and the long-term maintenance. Two purposes guided three hypotheses: "1. Does video-based group instruction lead to improved levels of targeted social skills among adolescents with ASD-ID when administered in a public-school setting by district personnel? 2. Are skills learned during video-based group instruction maintained over time? 3. Do skills learned during video-based group instruction generalize to a novel setting?" (Plavnik et al., p. 2674).

  The participants in the study were four students from the same high school, three males and one female, aged 14-17. All four students had an ASD diagnosis from non-school professionals, confirmed by the ADOS-2 (Autism Diagnostic Observation Schedule, Second Edition) instrument. Additionally, all four students were diagnosed with ID (Intellectual Disabilities) using the Weschsler Abbreviated Scale of Intelligence -- Second Edition (WASI-II) where standard scores less than 70 met ID criteria.

  The study used 18 video clips created by the authors to demonstrate six target behaviors. Each behavior was defined with an antecedent, a consequence, and an example. Student reactions to the videos were recorded and documented by paper and pencil. The targeted behaviors covered three domains: joining and requesting, assistance, and open-ended comments.

Three pre-intervention probes were conducted to gather baseline data using token economy for reinforcement. Each session of VGI was 40 minutes, five days a week. The sessions had three parts: rule review, direct instruction, and naturally occurring social interaction. Each student watched a video of the targeted behavior on an iPad, and was instructed to choose the appropriate response to the interaction. Exemplar videos were shown as a model of the targeted behavior. Maintenance probes were conducted two weeks after the intervention, and again after four months.

For domain one, two students responded correctly 89% and 86% of the time. The other two students responded correctly 68% and 46% of the time. The initial, baseline probes showed that all four students responded correctly 0% of the time. In domain two, two students responded correctly 93% and 94% of the time, while the remaining students scored 57% and 21% correct. This improved significantly from single digits or 0% during baseline probes. Lastly, from domain three, the students responded correctly 94%, 100%, 57%, and 33% of the time.

Maintenance probes were more difficult to correct. One student was unable to participate in either the two-week or four-month probe. One student participated in the two-week probe and not the four-month probe. For the two-week probes, the students responded correctly from 83% to 100% of the time across all three domains. The two students who participated in the four-month probe, scored 83% to 100% across the three domains.

The authors concluded that overall VGI could be a successful teaching method for social skills with students diagnosed with ASD-ID in the public schools. The authors added a caveat that modifications to VGI were necessary for students who had ASD *and* ID. The authors also received teacher and paraprofessional feedback that VGI was an effective and feasible procedure to implement within the classroom.

This was a small, pilot study with only four students and relied on an iPad to display video clips. Maintenance probes scheduled four months after the intervention included summer break so two students were not available for the four-month follow up probe. One of these students also missed the two-week follow up probe. However, clear detailed paragraphs for each participant including test scores and pertinent abilities were noted. Most importantly, teachers and paraprofessionals reported that this was a feasible classroom teaching method.

While Plavnick et al. used VGI for their video-based research, another method to consider is Video Self-Modeling, or VSM. VSM uses the student to create instructional videos for the student. Researchers Hart and Whalon (2012) selected a student with ASD and ID to create his own videos to demonstrate a target behavior. The goal of Hart and Whalon's research was to teach Austin, the targeted student, how to engage in classroom discussions by responding with VSM correctly on his iPad (p. 439).

Austin was a tenth grader who met the criteria for ASD and OHD categories on his IEP. Austin had moderate ID, used hearing aids, and received services for speech and language. Less than 40% of Austin's school day was spent in the mainstream class. He received specialized instruction for reading, writing, and math, as his reading level was equivalent to second grade (Hart and Whalon, p. 439). Teachers reported that Austin needed directions repeated and several minutes to respond to questions, which finally allowed him "to respond to basic, concrete questions" (Hart and Whalon, p. 439). Due to the high level of prompting and repetition needed for Austin to respond to basic questions, "increasing Austin's correct, unprompted response rate to questions posed during classroom instruction was the behavior targeted for intervention" (Hart and Whalon, p. 430).

Science class chosen for the intervention, as this was Austin's mainstream, inclusion

class. The outcome measure considered four categories: unprompted correct response, prompted correct response, incorrect response, and no response (Hart and Whalon, p. 440). Baseline data was collected over six 25-minute sessions, for 1.5 weeks. The five-week intervention continued for 20, 25-minute sessions focused on the target behavior.

The following procedure was used to obtain the video segment of Austin using his target behavior. Austin was videotaped with a teacher who read a script of basic science instruction with prompts for him to respond to three questions. The entire sequence was edited to limit Austin's responses to the questions to a one-minute video with pre-emptive phrases such as "'Austin pays attention in class. He always answers the teacher's questions. Watch Austin answer the question'" (Hart and Whalon, p. 441). Austin watched this video of the targeted behavior at least three times every day for before science.

The results of the intervention by Hart and Whalon indicated that although Austin continued to need prompting to respond, his correct responses increased from 4-6% to 42%, and his overall spontaneous responses increased to 53% from 21%. Additionally, during baseline data Austin did not respond in half of opportunities. Following the VSM, Austin's non-responses decreased to 28% (pp. 442-443). Lastly, Austin's teacher's response to the question about noticing a difference in the level of academic responses was "Somewhat agree. The intervention was simple to implement and did not take too long. The student responded well, but I feel like we would have gotten better results if we could have done it longer and had trained the para who worked with him beforehand" (Hart & Whalon, p. 443). The authors concluded that quantified results reasonably matched the teacher observations.

Hart and Whalon concluded that the use of an iPad for VSM instruction effectively increased unprompted academic responses. They continued that the results suggested that Austin

"began to engage in classroom discussion more often" (Hart & Whalon, p. 443). While extremely specific to one student in one situation, the results demonstrated the potential use of a common technology (iPad) to increase class participation and responses for students with ASD and other identified disabilities. Moreover, the teacher reported that the intervention was easy to use.

Chapter III: Application of Research

Rationale

Meaningful, social skills curricula for secondary students with ASD is lacking in availability. A consistent theme throughout the literature review was the lack of research into social skills for secondary-aged students with ASD. Most importantly, students with ASD are soon to be *adults* with ASD and face unique outcomes as compared to their same-age peers. Not least of these are "unemployment, underemployment, and disparities in compensation" (Ditchman et al., as cited from Shattuck et al., 2012), and may have received less sexuality education than their peers, creating a knowledge gap that leaves ASD students with increased risk of abuse and STI's (Ballan and Freyer, p. 262). In short, despite the best efforts of educators, we have sent our graduates with ASD into the world without complete preparation.

Meaningful social skills for secondary students needs to do several things. One, it needs to involve some of the six core skills for employment: "assessment, job placement assistance, counseling, job search assistance, on-the-job-support, and transportation" (Ditchman et al., p. 147). Concerns for successful employment were also noted as a concern of parents in Holmes, et al. (2018), and poor employment and independent living outcomes for ASD students were documented by Nasamran et al., (2017), and by Carter (2012).

Second, skills need to be generalized outside of social skills training. Or, as Spain and Blainey stated in their literature review, students need to have an understanding "and integration of these skills into daily social situations" (p. 877). In other words, lessons need to show where and how skills can be used outside of the classroom. It is of no use for students to be able to demonstrate skills or knowledge during social skills, and never in an outside environment. The inclusion of quarterly lessons involving job skills (interviews, job versus career, entry level work

versus dream job, etc.) should help give students experience and knowledge of their skills outside the classroom.

Job skills leads into the third need: to address transition and graduation. Social skills are at least as important as academic skills. As Nasamran et al. (2017) stated, "emphasis on academic achievement may lead to a reduced focus on social skill instruction, which may be especially important for students with ASD given that 'persistent deficits in social communication and social interactions across multiple contexts' are a defining feature of ASD" (as cited from the *Diagnostic and Statistical Manual of Mental Disorders*, 5th Edition, p. 343). In other words, social needs always need to be worked upon while students are enrolled in school with the available services.

As previously noted, ASD students tend to have poor outcomes after graduation as compared to their same-age peers, in part due to their social needs. As documented by McCollum, et al. (2015) adults with ASD in the two years after graduation expressed difficulty in initiating social interactions in the workplace (p. 994). Not only do students need to be aware of the possibilities after graduation (college, technical training, military, employment) but they need to be able to initiate social interactions in these situations.

Lastly, each term has a lesson block built in for student input. Researchers Sani-Bozkurt et al. (2017) included feedback from students with ASD in the development of their social stories' computer program. While not a software program, this allows students an opportunity to advocate for their needs, and a chance to participate in their education. This also will provide a reflective time for feedback on lessons over the past term for continued improvement.

Explanation

The purpose of the application project is to provide an outline for a school years' worth of social skills lessons that are relevant to the needs of secondary students. Many social skills curricula used in schools is heavily focused on younger students who are learning the tools and pieces of a conversation. There are little age appropriate curricula for secondary students. The lack of affordable, relevant, curricula for secondary students makes meaningful lessons difficult for the teacher and the students. There is a need for social skills lessons that are age appropriate, and that address the specific needs of secondary students.

While there are curricula available, such as the Program for the Education and Enrichment of Relational Skills (PEERS), the price to attend one of the PEERS trainings in Los Angeles is prohibitively expensive. The price for a June, 2019 training was $2,200 (see appendix A). That did not include any transportation or accommodation costs associated with participation in the training. The prospect for a school district of sending one teacher to a single training that could easily exceed $3,000 is a difficult prospect for districts with ample resources. It impossible for those with limited resources. It is also extremely unlikely to expect a teacher to pay for a training that costs thousands of dollars out of their personal income.

Affordable options, such as Everyday Speech are available for $99 or $199 per year. While significantly more affordable than a PEERS training, it is a curriculum dependent upon videos, rubrics, and worksheets. Secondary students, who have graduation or transition moving closer every day, and if the students have not already applied for employment may have already, most have likely moved beyond watching and discussing videos. In other words, they have outgrown watching and discussing videos as a primary mode of instruction.

Videos do have their uses when made relevant to the student, as shown in Plavnick et al.

(2015) and Hart & Whalon (2012). However, to be dependent upon stock videos at the secondary level is not a way to engage students with video instruction. There is a need for social skills training for secondary students that is not thousands of dollars, is not dependent upon one media, and is relevant to their skill development and transition needs.

Lastly, the needs of secondary students differ from the other ages in K-12 education in that their time in school is ending. A theme throughout the literature review was a lack of social skills training that was focused on needs after high school. Especially given that "moving into independent environments of work and college, and away from reliable parent and teacher social prompting may be too abrupt a transition for many high functioning individuals with ASD" (McCollum et al., 2015 as cited from Hume et al., 2009). The transition out of high school is only if a walk across the stage before all the support services cease. Students with ASD need to be able to walk across the stage and have the social tools available to use.

Audience

The intended audience is secondary ASD students at Eden Prairie High School. While targeted for ASD students who receive social skills training, the lessons could easily be adapted to other resource room needs. Given the need to start transition conversations sooner rather than later, the lessons could also be adapted for use in a middle school setting.

Resources Needed

The resources needed are relatively simple, inexpensive at worst, and many teachers would already have the resources from their district. A computer or laptop, a projector, a printer to make any needed handouts, Post-It notes, and pencils or pens cover all the needed supplies. One teacher could follow the outlines to make the lessons suit their specific needs. Several

lessons utilize videos from YouTube that are readily available, such as "Tea Consent" to be included in a unit for sex education.

Sustainability

The lesson outlines attached in Appendix A should be sustainable to most educators. They are also adaptable as needed to meet either individual needs, or specific social skills group needs. The lessons should be considered the first year of a two-year cycle of lessons. The lessons should also be changed as needed to reflect input from co-teachers and student feedback.

Chapter IV: Discussion and Conclusion

Summary

The literature review contained six main themes. First, that the sooner transition needs are addressed and developed the better possible outcomes for students with ASD. While a part of the IEP process once a student turns 14 in Minnesota (or 16 under federal law), more emphasis and development is needed in this area to prepare students for life after high school. Academics should not be given priority over the life-long social skills that will continue to be developed and applied in either post-secondary education, or employment which is the second theme.

For secondary ASD students, social skills development needs to include training about employment, and how social skills will be generalized for employment. Ideally, employment skills would be developed in conjunction with available VR services, or employment-oriented electives, such as a business or careers course.

Third, students should be able to give input regarding their education, including social skills topics. Given that social skills instruction is the designated time during their education to develop the skills to be used for employment, post-secondary education, and independent-living, students should have a voice in suggesting topics. This will add ownership of their education, and will offer a safe, structured space to self-advocate.

Fourth, user-created videos can be made to create relevant teaching tools. Given that many districts have given iPads or laptops to students, or otherwise make sure they are available, the ability to have student-created videos for social skills is increasingly simple and available. Student-created videos can be a way to blend student learning with student use and learning of available technology.

Fifth, when possible, peer groups should be incorporated to encourage social interaction and disability awareness amongst same-age peers. This will come with the challenge of "how peer awareness can be raised without labelling students...is a dilemma" (Landor and Perepa, p. 137). In other words, students need to be included in a group without devolving into a "them" and "us" mentality. That dilemma is manageable and arguably outweighed by the possible benefits of peer groups, as noted by Symes & Humhrey (2010), Radley et al. (2017), and Kasari et al. (2016). All three of these researchers documented positive outcomes from some form of peer group.

Lastly, social skills are as important as academic skills. If for no other reason, one, social deficits are a part of the definition of ASD under the DSM-V, and two, when listed in the IEP as a specific need and goal social skills is legally required. Academics do not have the diagnostic nor individual legal obligations requiring their attention that social skills commands.

Professional Application

Secondary social skills for ASD students is an area of high-needs that is under-researched currently, and is an area of high needs. Transition goals are mandated by federal law by the age of 16. This only allows two years of formal transition planning. The State of Minnesota, however, mandates transition planning at age 14, allowing for the possibility of four years of formal transition planning. The overarching goal of social skills training at the secondary level is preparing ASD students with the skills and tools for positive outcomes after graduation, whatever they may individually be.

Social skills instruction needs to be conducted with broad transition needs always in mind. Students need to see where the application of social skills will be used in their daily life, especially after graduation. Students want to achieve something during high school and after, it is

the obligation of educators to tie future and current achievements into their daily social skills lessons to the greatest extent possible. Social ability is not *the* factor of success after graduation, however it is a pervasive, necessary skill that will be involved with nearly every aspect of living.

Limitations of the Research

One limit of this research is that due to the lack of research on social skills for secondary students with ASD, it was necessary to include research from the elementary level. Of the included elementary-based articles, reasonable discretion was used to determine whether the subject matter was applicable at the secondary level.

Another limit was that research was also included that contained research for comorbidity of ASD with ID. This comorbidity was not an area of application. However, like the elementary research, the ASD-ID research contained information that is relevant to ASD students without ID comorbidity.

The final limitation was that it was impractical, if not impossible, to set a narrower focus area for social skills at the secondary level. Due to the lack of research currently, the ability to research only one area (employment, transition, post-secondary education, self-advocacy, etc.) is not possible. A wider net for a research topic was necessary to garner as much information about secondary social skills for ASD students as possible.

Implications for Future Research

One implication for future research is the long-term outcomes for ASD students after high school. From Ditchman et al. (2018) research for employment outcomes was closed after only "90 days of competitive employment, which fails to capture longer term employment outcomes or consider levels of job satisfaction" (p. 151). Also, McCollum et al. researched outcomes of young adults with ASD ages 18-25 and found a mixed bag of outcomes after

graduation from high school. Given that the oldest young adult was 25, this was only a maximum of seven years of data for outcomes after graduation. The data for outcomes five, ten, or twenty years is nascent at best. Educators do not know what, if any, quantifiable long-term success former students have or have not achieved.

Another is for more research is what other skills or needs need to be included into the preparation for transition. While Nasamran et al. specifically stated that "social skills were a significant predictor" (p. 352) in all three of their postsecondary outcomes of employment, post-secondary education, and independent living. However, it was not *the* predictor of outcomes. The impact of social skills should not understate, and their need should not blind us to the other needs that affect positive, post-secondary outcomes. This literature review focused on social skills which are not the only area needed for positive outcomes after graduation.

Questions that remain are one, how can educators and schools at the secondary level involve families more with social skills development? Particularly in regards to families who have 'sheltered' their child from the diagnosis of ASD, and/or the details of their IEP. Through the inclusion of transition goals at the age of 14 in Minnesota law, students have increased input in their IEP and their goals for after graduation, and need to be present for all meetings. This duality is difficult to navigate with families who have minimized the reality of specialized services for their student.

The second question is how does a multicultural and diverse educational system affect how educators deliver social skills? At no place in the literature review was diversity discussed in the articles. As minority-majority districts, cities, and states become the norm in the US, multiculturalism increasingly needs to be addressed within the schools. This not only includes social skills curriculum, but teacher training as well.

Lastly, how can educators involve VR services more with students who qualify? VR services offer additional employment readiness skills and training. Despite its benefits, it stands alone from other, more integrated services such as physical or occupational therapy.

Conclusion

While a challenging area to find specific curriculum for, social skills at the secondary level for students with ASD presents many different avenues of instruction. Many of which are not as available at the primary or middle school levels. Development of research-based curriculum is currently the best option for social skills instruction for ASD students.

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Appendix A

Attach PEERS Forms hither