Evaluation of Communication Changes for High School Students with Severe Developmental Disabilities Resulting from Peer-Mediated Interventions

by

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Abstract

Federal policies, such as No Child Left Behind and the Individuals with Disabilities Education Improvement Act, have helped to stem the movement toward inclusive practices in education. Yet, simply placing students with severe disabilities within an inclusive classroom is not enough. Researchers and educators must ensure that these students are receiving appropriate educational services that meet their individual needs. Peer-mediated interventions are proving to be an effective approach for facilitating inclusion with students with severe disabilities. These interventions have been beneficial in improving social, communicative, and academic outcomes for elementary school students with severe disabilities; yet, few studies have investigated the impact of peer-mediated interventions on high school students, and even fewer have focused on evaluating potential communication gains or efficacy for students with an augmentative and alternative communication (AAC) system. As many students with severe disabilities experience deficits in both socialization and communication it is important to find interventions that foster both of these skills. This study evaluated whether high school students with severe disabilities displayed gains in communication skills (i.e., expressive, receptive, and social language) following two types of peer-mediated interventions (i.e., peer support and peer network) compared to a control group. This study also investigated whether high school students requiring the use of an AAC system use the system, and whether these individuals obtain social and academic gains. Results illustrated that high school students participating in peer support or peer network interventions did not display any significant gains in expressive, receptive, or social communication skills. Additionally, while 30 students were identified as having an AAC, none of the students utilized their AAC systems at baseline. Despite this, both students in the peer support and peer network interventions displayed gains in the number of social interactions

they had with peers; however, students in the peer network condition displayed fewer gains. Students in the peer support intervention also demonstrated gains in academic engagement. Only one student used their AAC system consistently at post-intervention. This individual displayed greater gains, than their peers that did not use their AAC systems, in the number of interactions with peers and percentage of time they were academically engaged. These results indicate that students requiring the need of an AAC system benefit from peer-mediated interventions.

Chapter 1: Background

Overview

Federal legislation mandates (e.g., Individuals with Disabilities Education Improvement Act, 2004; No Child Left Behind Act, 2001) are now requiring teachers and school professionals to utilize evidence-based intervention (EBIs) within the schools in order to ensure students with disabilities are receiving appropriate and effective services (Individuals with Disabilities Education Improvement Act, 2004; No Child Left Behind [NCLB], 2002). As of 2011, approximately six million students with disabilities (ages 3 through 21) were receiving special education services under the Individuals with Disabilities Education Improvement Act 2004 (IDEA) (Snyder & Dillow, 2013). Nearly one million of these students had a diagnosis of autism or an intellectual disability (Snyder & Dillow, 2013).

In 2010, approximately 39% of students with autism were in the general education classroom more than 80% of the day, compared to only 18% of children with cognitive impairments (Snyder & Dillow, 2013). Each year more and more children with disabilities are being placed into the general education classroom, as IDEA (2004) states that children must be educated in the least restrictive environment with their general education peers, to the fullest extend deemed appropriate (Snyder & Dillow, 2013). With the push for a more inclusive educational experience for students with disabilities, it is vital that researchers and educators find the best services in order to help these students succeed in these inclusive education classroom settings. Yet, determining ways that students with disabilities are able to fully participate both socially and academically, in a meaningful way, within these inclusive classrooms remains to be a challenging undertaking (Carter, Cushing, Clark, & Kennedy, 2005).

Individuals with intellectual disabilities and/or autism often have communication and

social deficits (American Psychiatric Association [APA], 2000, 2013). These impairments may impact an individual's relationships, level of happiness, and employment, leading to a life filled with loneliness (Beck, Thompson, Kosuwan, & Prochnow, 2010; Bellini, Peters, Benner, & Hopf, 2007). Social interactions are especially important during adolescence and have powerful, enduring influences on students' lives (Carter, Hughes, Guth, & Copeland, 2005). Social interaction, with typically developing peers, is important for adolescent students with moderate and severe disabilities. Peer interactions are associated with gains in academic, functional, and social development, as well as, increases in social competence, friendships, and overall quality of life (Fisher & Meyer, 2002; Hunt & Goetz, 1997).

Communication encompasses all aspects of education, and therefore, it is necessary that all students be able to effectively communicate in order to successfully participate in educational activities (Calculator, 2009; Worah, 2011). Matas, Mathy-Laikko, Beukelman, and Legresley (1985) found that 3% to 6% of special education students in Washington did not use speech as their primary communication mode. Similarly, Worah (2011) found that 3% of students in special education, across 54 districts in Connecticut, required some type of communication device. Approximately 18% of these students were in high school (Worah, 2011). Children with limited communication skills face both social and educational isolation, as well as considerable frustration, since they are not able to communicate their needs, wants, and feeling to their family, peers, and teachers (Romski & Sevcik, 2005). It is therefore important to find interventions that target both social and communicative skills. Peer-mediated interventions may be a viable option.

A peer-mediated intervention (PMI) is a type of intervention where typically functioning peers are trained to provide academic, behavioral, and/or social support to their classmates with disabilities (Chan, Lang, Rispoli, O'Reilly, Sigafoo, & Cole, 2009; Garrison-Harrell, Kamps, &

Kravitis, 1997). Peer-mediated interventions include specific approaches, such as, peer support and peer network interventions. A peer support intervention is a school-based intervention, which involves identifying a student with severe disabilities who needs assistance in order to fully participate in class activities (Shukla et al., 1999). The student with disabilities is paired up with one or more peer support(s) (i.e., typically developing classmate). The peer support(s) assist the student with disabilities, helping them to fully participate within the classroom setting, under the supervision of a qualified paraprofessional or teacher (Carter & Hughes, 2007). A peer-network intervention also promotes social interactions between students with severe disabilities and their typically developing peers, but it is implemented outside of an inclusive classroom setting (Garrison-Harrell, Kamps, & Kravits, 1997; Haring & Breen, 1992).

While peer-mediated interventions have displayed their effectiveness in increasing peer socialization, "the communication skill of the individual with a disability is unquestionably important to the success of the social interaction" (Carter, Macquarie, & Maxwell, 1998, p. 77). It is therefore pertinent to find interventions that address both the communicative and social skill needs of high school students with severe developmental disabilities (i.e., intellectual disability and/or autism) in order to best accommodate them within the school setting and increase their quality of life (Rhea, 2008). Peer-mediated interventions, in general, have proven to be beneficial, for children with autism between the ages of 3 through 14, in increasing socialization, communication skills, and school engagement (National Autism Center, 2009; Neitzel, 2008; Owen-DeSchryver, Carr, Cale, & Blakeley-Smith, 2008). More specifically, peer supported interventions for preschool-aged children have also demonstrated improvements in social relations in the areas of engagement, conversing, and turn-taking (Franke et al., 2010). Peer support interventions, additionally, have been effective and beneficial for children with

developmental disabilities in increasing peer initiations and responses, peer acceptance, and in improving school engagement (Carter et al., 2005; Carter et al., 2007; Frankel, Gorospe, Chang, & Sugar, 2011; Owen-DeSchryver et al., 2008).

Despite the previously noted benefits, high school students with developmental disabilities often have little opportunity to interact socially with their typically developing peers, within the school setting (Carter & Hughes, 2007). Socializing with multiple peers is often prohibited or discouraged during class, in general education classrooms in middle and high school, which makes it particularly challenging for students with and without disabilities to socialize with each other at school (Shukla, Kennedy, & Cushing, 1999). A study by Hughes et al. (1999), observing the social interactions of high school students during lunch over 68 hours resulted in only 10 interactions between students with intellectual disabilities and their peers without disabilities.

Without intentional intervention efforts, few social interactions occur between high school students with and without disabilities (see Hughes et al., 1999). In fact, even when students with developmental disabilities are physically in the same classroom as their peers without disabilities, they often remain socially isolated, unless measures are taken to intervene (Carter, Hughes, et al., 2005). Due to the limited opportunities to socially interact with peers, it is not shocking that students with developmental disabilities often lack adequate social skills (Carter & Hughes, 2007). Language impairments may additionally stifle social skill acquisition, as peers are less likely to interact with students who do not know how to successfully initiate or sustain a conversation. This, in turn, may further hamper a student's ability to develop social conversational skills (Carter & Hughes, 2007).

It is important that school personnel know how to include students with disabilities into

the general education classroom while also fostering their social and communicative skills. The paraprofessional support model is widely used, and has been viewed by parents and educators as an effective model for including students with disabilities in the general education classroom, despite the lack of scientific evidence (Suter & Giangreco, 2009; Tews & Lupart, 2008). However, peer-mediated interventions are more effective in increasing peer socialization and school engagement than adult supported interventions (Carter et al., 2007). Educators must utilize effective methods to promote meaningful social interactions between students with and without disabilities within the school environment, in order to ensure that all individuals involved have positive outcomes (Carter & Hughes, 2007; Shukla et al., 1999). This is especially important as more students with severe disabilities are being placed into inclusive classroom settings (Shukla et al., 1999).

Peer-mediated interventions are clearly valuable for students with severe developmental disabilities; however, only two studies have investigated the use of peer-mediated interventions with high school students (see Carter et al., 2005; 2007). While social and communication benefits have been reported for younger children, there are no studies investigating the potential communicative gains for older students (Carter et al., 2005; 2007; Garrison-Harrell, Kamps, Kravits, 1997; National Autism Center, 2009; Neitzel, 2008; Owen-DeSchryver et al., 2008). Further empirical research is needed to investigate potential benefits for high school students with poor language skills. Additionally, little is known about the efficacy of peer-mediated interventions for students with disabilities using augmentative and alternative communication (AAC) systems (Garrison-Harrell et al., 1997). This research would help educators to better determine which students would benefit most from a particular type of peer-mediated intervention.

Severe Developmental Disabilities

Developmental disabilities are a life long, chronic condition that impacts major life activities, such as language, mobility, learning, self-help, and/or independent living (CDC, 2011). "Although considerable diversity exists among individuals who share the labels of intellectual disabilities, autism, and other developmental disabilities, limitations in social interaction skills are common and a key to definitional criteria" (Carter & Hughes, 2007, p. 322). Researchers from the Centers for Disease Control (CDC) have investigated the occurrence of developmental disabilities in children from 1997 through 2008. Investigators found that developmental disabilities are rather common in the United States, occurring in approximately one out of six children. The prevalence of developmental disabilities reported by parents has increased from 1997 to 2008 by 17.1% (i.e., approximately 1.8 million) (CDC, 2011). With such a significant increase in the diagnosis of developmental disabilities, the need for appropriate services to best serve this population is of paramount importance.

Prevalence and identification of adolescents with intellectual disabilities. Intellectual disabilities, also known as cognitive disabilities, are the most common type of developmental disability (National Dissemination Center for Children with Disabilities [NICHY], 2011). While prevalence rates for intellectual disabilities may vary by age, about 1% of the population meets criteria (APA, 2013). The prevalence for severe intellectual disabilities is approximately 6 out of every 1,000. It is estimated that 1 out of every 10 individuals receiving special education services has an intellectual disability (NICHY, 2011). An intellectual disability is a disorder with an onset prior to the age of 18, which impacts both one's intellectual and adaptive functioning (American Psychiatric Association [APA], 2013). Therefore, this diagnosis typically includes both intellectual and adaptive behavioral testing; academic testing is also included when

the evaluation occurs within the school environment in order to determine if the student qualifies for special education services.

In 2010 Rosa's Law was signed, which mandated that references of "mental retardation," in federal law, be change to "intellectual disability" (Rosa's Law, 2010). Therefore, the term "intellectual disability" is used in the guidelines published within the Individuals with Disabilities Education Act of 2004 (IDEA). IDEA (2004) defines an intellectual disability as "…significantly subaverage general intellectual functioning, existing concurrently with deficits in adaptive behavior and manifested during the developmental period, that adversely affects a child's educational performance" [34 CFR §300.8(c)(6)]. Under Ch. PI 11.36, Wisconsin Statute, the term cognitive disability is utilized, but is synonymous with the definition of an intellectual disability as defined under IDEA (IDEA, 2004; PI 11.36, Wis. Stats). Thus, children within the school systems in the state of Wisconsin who have an intellectual disability would qualify to receive special education services under the eligibility category of cognitive disability (PI 11.36, Wis. Stats).

In order to qualify for special education services under the eligibility of cognitive disability in the state of Wisconsin, a student must have sub-average intellectual functioning, a deficit in adaptive functioning in at least two areas, and an impairment in academic functioning (PI 11.36, Wis. Stats) (see Appendix A). All three criteria must be met in order to meet eligibility criteria for having a cognitive disability. Sub-average intellectual functioning is indicated as having an IQ standard score of approximately 75 to 70, or lower, on at least one standardized, individually administered intelligence test designed to measure intellectual functioning (e.g., *Stanford-Binet Intelligence Scales, Fifth Edition* [Roid, 2005]; *Wechsler Intelligence Scale for Children, Fourth Edition* [Wechsler, 2003]). Furthermore, the individual's

impairment is anticipated to last throughout their lifetime (PI 11.36, Wis. Stats).

A deficit in adaptive functioning is also illustrated by a standard score of two or more standard deviations below the mean (i.e., 70 or lower) on an individual, comprehensive, standardized or nationally-normed measure of adaptive functioning (PI 11.36, Wis. Stats). These assessments may include interviews, tests, rating scales, and/or observations. Impairments in adaptive functioning may be found in communication, self-care, social skills, daily living skills, health and safety, academic or recreational skills, community use, learning and decision-making, and/or work. Common instruments used to assess adaptive functioning skills include the *Vineland Adaptive Behavior Scale, Second Edition* (*Vineland-II*; Sparrow, Cicchetti, & Balla, 2006) and *Adaptive Behavior Assessment System, Second Edition* (*ABAS-II*; Harrison & Oakland, 2003) (PI 11.36, Wis. Stats).

Lastly, a deficit in academic functioning is broken down into two separate age ranges (i.e., 3-to-5 and 6-to-21) (PI 11.36, Wis. Stats). In order to meet eligibility criteria under the three to five age range, a child must have a standard score of two or more standard deviations below the mean on a comprehensive, individual, standardized measure(s), in a minimum of two areas: (a) academic readiness, (b) expressive or receptive communication, or (c) motor skills. The *Developmental Assessment of Young Children, Second Edition* (*DAYC-2*; Voress & Maddox, 2013) and *Battelle Developmental Inventory, Second Edition* (*BDI-2*; Newborg, 2005) are commonly used measures to assess these three specific areas (PI 11.36, Wis. Stats).

Similarly, in order to meet eligibility criteria for a cognitive disability for children between the ages of 6 through 21, the individual must obtain a standard score of two or more standard deviations below the mean on a comprehensive, individual, standardized measure(s), in general information in a minimum of two areas: (a) reading, (b) writing, and (c) math (PI 11.36,

Wis. Stats). One frequently used measure to assess these areas is the *Woodcock Johnson-Third Edition, Tests of Achievement* (*WJ III ACH;* Woodcock, McGrew, & Mather, 2001). For children who are unable to complete a standardized assessment, developmental observations, rating scales, and interviews may be utilized to assess academic functioning. Despite the child's age, the cognitive disability must be present prior to the age of 18 (PI 11.36, Wis. Stats). Tennessee, unlike Wisconsin, uses the term intellectual disability within the education system (Tennessee Department of Education, 2010). Despite this, the definition and assessment criteria are the same (see Appendix A and Appendix B).

Recently, the APA has revised the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision* (DSM-IV-TR). Clinical practitioners generally use diagnostic criteria set forth by the DSM-IV-TR, or now the DSM-V, to diagnose intellectual disabilities. While the diagnostic criterion has remained unchanged, the specific diagnostic terminology used has changed from Mental Retardation in the DSM-IV-TR to Intellectual Disability in the DSM-V, due to Rosa's Law in the federal statute (Public Law 111-256) (APA, 2000; 2013). Therefore, the term, Intellectual Disability, has now become the common expression used by professionals in both medical and educational settings (APA, 2013).

Based on the diagnostic criteria, set forth by the DSM-IV-TR and DSM-V, an impairment in intellectual functioning is specified as an IQ of approximately 70 or below (measurement error 70 +/- 5), on a standardized, individually administered intelligence test (e.g., *Wechsler Intelligence Scales for Children, 4th Edition, Stanford-Binet, 5th Edition* (APA, 2000; 2013). In order to be diagnosed with an intellectual disability, as defined by the DSM-V, a deficit in adaptive functioning must also be indicated, along with the impairment in intellectual functioning. Adaptive functioning deficits can be determined via the use of teacher evaluations,

developmental reports, or medical history. Parent and teacher measures, such as the *Vineland Adaptive Behavior Scales* may be utilized to determine adaptive functioning levels (APA, 2000). The severity of an Intellectual Disability has gone unchanged from the DSM-IV-TR to the DSM-V, ranging from Mild, Moderate, Severe, or Profound (APA, 2000; 2013).

It is important to note that the level of severity is determined by the measure of adaptive functioning, because this often defines the type and level of services and supports that are needed (APA, 2013). Furthermore, adaptive functioning is more likely to improve with intervention, versus cognitive ability, which is more stable (APA, 2000).

Functional impairments of adolescents with intellectual disabilities. Intellectual disabilities impact both intellectual and adaptive functioning (CDC, 2011). Intellectual impairments may include deficits in reasoning, problem solving, planning, abstract thinking, and/or learning (APA, 2011). Additionally, adaptive impairments may limit functioning in daily life. Adaptive functioning is a measure of how well an individual handles general life demands and displays skills necessary for living independently, as well as skills that are appropriate, given the individual's age and background (APA, 2000, 2013). For example, there may be deficits in communication, academics, social skills, self-care, play and leisure, and/or independent living (APA, 2000, 2013; NICHY, 2011).

Individuals with intellectual disabilities often have poor communication skills, which can make it difficult for them to let others know what they want, what they enjoy, and what they dislike (Grove, Bunning, Porter, & Olsson, 1999). Extensive evidence indicates that students with intellectual disabilities have few interactions with their typically developing peers (e.g., Cutts & Sigafoo, 2001; Dore, Dion, Wagner, & Brunet, 2002; Hilton & Liberty, 1992; Hughes et al., 1999). This lack of interaction with other students, especially peers without disabilities,

prohibits students with intellectual disabilities from having an opportunity to practice or see models using appropriate communication skills (Carter & Hughes, 2007).

Due to these aforementioned deficits, individuals with intellectual disabilities generally learn and develop skills more slowly than their peers without disabilities (NICHY, 2011). Individuals with intellectual disabilities may need more opportunities, repetition, and practice in order to learn and master skills. Thus, interventions that address social skills impairments, such as peer-mediated interventions, may be highly beneficial for students with intellectual disabilities, and may also improve communication skills.

Prevalence and identification of adolescents with autism. The prevalence of autism spectrum disorders (ASD) has been steadily increasing over the past decade (Center for Disease Control [CDC], 2014; National Autism Center [NAC], 2011; Weintrab, 2013). The increase may be attributed to a variety of reasons, such as an increased awareness, changes in diagnostic criteria, and possibly even genetic and environmental factors (Folstein, 2001; NAC, 2011; Weintrab, 2013). Autism is nearly five times more common in males (1 out of 42) than females (1 out of 189) (CDC, 2014). Currently 1 in 68 children are diagnosed with an ASD (CDC, 2014).

An autism spectrum disorder (ASD) is a neurodevelopmental disorder characterized by deficits in social communication and interactions, and restricted and/or repetitive behaviors or interests (American Psychiatric Association [APA], 2013). While symptoms must be present in early development (i.e., before age three), they may become more apparent later on with the increase of social demands. It is recommended that a full comprehensive assessment be performed to determine an autism diagnosis (Wilkinson, 2010). Practitioners working in clinical settings generally use the criteria published in the DSM-IV-TR to determine an autism diagnosis

(APA, 2000). Within the DSM-IV-TR, autism falls under the category Pervasive Developmental Disorders (PDD). "PDD are characterized by severe and pervasive impairment in several areas of development: reciprocal social interaction skills, communication skills, or the presence of stereotyped behavior, interests, and activities" (APA, 2000, p. 69). The PDD category contains the following conditions: Autistic Disorder, Asperger's Disorder, Rett's Disorder, Childhood Disintegrative Disorder, and Pervasive Developmental Disorder-Not Otherwise Specified. Generally, symptoms associated with these disorders are apparent during the first few years of the child's life, and are often comorbid with an intellectual disability (APA, 2000).

Autism, also known as Autistic Disorder in the DSM-IV-TR, is characterized by impairments in social interactions, communication, and restricted or repetitive behaviors, interests, and activities (APA, 2000). Impairments are evident prior to the age of three. Language ability and general intelligence have been found to be the best variables related to prognosis. Only a small percentage of individuals with an Autistic Disorder have skills necessary to be self-sufficient, that is living and working independently (APA, 2000).

The diagnostic criteria for autism was changed significantly in the new *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.; *DSM–V*), published in the summer of 2013 (APA, 2013). The DSM-V considers persons with "a well-established DSM-IV diagnosis of Autistic Disorder, Asperger's disorder, or Pervasive Developmental Disorder Not Otherwise Specified" as having an autism spectrum disorder (APA, 2013, p. 51). According to the DSM-V criteria, Rett's Disorder and Childhood Disintegrative Disorder do not fall under the autism spectrum disorder umbrella; however, Rett's Disorder may be diagnosed as a comorbid genetic disorder. The DSM-V views ASD as a continuum; therefore, severity of an individual's impairment in social communication and restricted and repetitive behavior is rated on a scale

from one to three (Level One Requiring Support, Level Two Requiring Substantial Support, Level Three Requiring Very Substantial Support). Specifiers (e.g., intellectual disability) and co-morbidities (e.g., depression) are included as well, in order to describe each individual's unique presentation. Still, despite all the changes within the newer edition of the DSM, the primary diagnostic characteristics for autism remain the same (i.e., impairment in social communication and interaction, and restricted and repetitive behaviors, interests, or activities) (APA 2000; 2013). It is important to note that the participants in the present study were diagnosed under the DSM-IV-TR criteria.

Unlike practitioners working in clinical settings, clinicians working within the educational system abide by the guidelines specified in the Individuals with Disabilities Education Act of 2004 (IDEA) when identifying children on the autism spectrum. IDEA (2004) defines autism as "a developmental disability significantly affecting verbal and nonverbal communication and social interaction, generally evident before age three that adversely affects a child's educational performance." Still, the main characteristics associated with autism, according to IDEA, are the same as outlined by the DSM-IV-TR and DSM-V, including: engagement in restricted and repetitive behaviors and activities and social and communication deficits. Students may be eligible to receive special education services for autism under IDEA if they are between the ages of 3 and 21, display a need for special education, and meet the classification criteria in the state they live (IDEA, 2004). Eligibility criteria checklists for Wisconsin and Tennessee are illustrated in Appendices C and D.

Functional impairments of adolescents with autism. Social interaction and communication deficits are the primary characteristics of an autism spectrum disorder (APA, 2000; 2013). As a result of these deficits, individuals on the autism spectrum may have

difficulties interacting and communicating with others. Individuals with autism may have trouble understanding and interpreting social conventions and/or rules or verbalizing information to others. They may also demonstrate delays in their verbal development or they may completely fail to develop speech (APA, 2000; 2013). Additionally, individuals with autism may display poor nonverbal skills, which are needed for effective social interactions, such as eye contact and joint attention. While some individuals with autism may not appear interested in establishing friendships with others, some individuals may have the desire to establish relationships but lack the necessary social skills (APA, 2000). These social skill deficits become more pronounced depending on the severity of the disorder and are found to continue through adulthood, which may be debilitating for the individual (APA, 2000; Matson, Boisjoli, González, Smith, & Wilkins, 2007). In fact, Howlin, Mawhood, and Rutter (2000) found that without proper intervention these impairments tend to increase, rather than decrease, with age.

Children with augmentative and alternative communication systems. While the majority of previous research utilizing peer-mediated supports, in order to increase social interactions between students with and without disabilities, focuses on students with moderate to severe intellectual disabilities and/or autism, much less is know about the efficacy of these interventions for students with disabilities using augmentative and alternative communication (AAC) systems (Carter & Hughes, 2007). Many children with developmental disabilities also have language impairments that may further hamper their social interactions with typically developing peers (Carter & Hughes, 2007). According to Beukelman and Mirenda (2012), approximately 1.3% of the population, or an estimated four million Americans, are unable to meet their daily communicative needs with their natural speech. Furthermore, in a review of demographic data, it is estimated that between 0.8% and 1.2% of the United States population

have communication impairments that are severe enough to require an AAC (Beukelman & Ansel, 1995).

Due to the large number of children with developmental disabilities who do not have functional speech, an AAC system may provide an additional means of communication and a way to overcome communication barriers, allowing them to express their needs (Carter & Hughes, 2007; Mirenda, 2003; Van Der Meer & Rispoli, 2010). Simply put, an AAC is a system consisting of symbols, aides, strategies, and techniques used to supplement or replace spoken and/or written language (American Speech-Language-Hearing Association [ASHA] 2002; Romski & Sevcik, 2005). There are a variety of AAC systems, for example, communication books, picture exchange communication system (PECS), computer devices, and voice output communication aides (VOCAs)/speech generating devices (SGDs) (Carter & Hughes, 2007; Dicarlo & Banajee, 2000; Frost & Bondy, 2002). For these students with severe disabilities and complex communication needs, an AAC may be crucial in socially connecting to others, participating in activities, and ensuring that their basic needs are met (Beukelman & Mirenda, 2012).

Unfortunately, some parents may refuse to allow their child to use an AAC system in fear that it may hinder speech production, believing that it should only be used as a last resort (Beukelman, 1987; Fossett & Mirenda, 2007). Yet, studies indicate that the use of an AAC device does not hinder a child from learning or using speech (Schlosser & Wendt, 2008). In a review by Schlosser & Wendt (2008), which included nine studies and a total of 27 children, no decreases in verbal spoken language were found when AAC systems were used. In fact, multiple studies indicated that an AAC device might actually promote gains in verbal communication, even into late adulthood (see Mirenda, 2003; Schlosser & Wendt, 2008; Millar, Light, &

Schlosser, 2006). In a meta-analysis by Millar, Light, and Schlosser (2006) that included six studies with strong experimental control, none of the 27 participants demonstrated decreases in speech production following AAC interventions. While 11% of the participants did not show any change in speech productions, 89% demonstrated an increase; unfortunately, the effect size was not provided to illustrate the degree of change (Millar et al., 2006). Schlosser & Blischak (2001) also reported that AAC systems might aid comprehension skills by allowing an individual to "associate graphic symbols with word referents."

Another barrier to AAC use is the misconception that children must be able to demonstrate many essential skills in order to actually benefit from an AAC, and that VOCAs/SGDs are only appropriate, or practical, for older individuals or students without intellectual disabilities (Fossett & Mirenda, 2007). However, these claims have been refuted by research (e.g., Cress & Marvin, 2003; Romski & Sevick, 2005). According to Cress & Marvin (2003), the only prerequisites to AAC are "children's natural actions and behaviors" (p. 255). Communication begins at birth, starting with the initial opportunities to interact, despite the mode of communication. Thus, an AAC intervention may be utilized when a child first displays communicative delays or when their communicative behavior is difficult to interpret (Cress & Marvin, 2003). Research has illustrated the success of AAC interventions in children between the ages of six and eight; additionally, many of these strategies are being used for children under the age of three who are at-risk for being nonverbal or unintelligible (Fossett & Mirenda, 2007; Culp, 1989; Goossens', 1989; Light et al., 1985). AAC interventions have also been successful for older individuals with intellectual disabilities, with cognitive skills in the 18 to 36 month range, demonstrating that AAC interventions are appropriate for children with varying abilities (Brady et al., 1995; Gobbi et al., 1986; Romski & Sevick, 1996).

Even with having the ability to use an AAC, negative attitudes may prevent an individual from interacting with someone with an AAC device (Gorenflo & Gorenflo, 1991; Lilienfeld & Alant, 2002). Yet, studies indicate that the level of familiarity with an individual and their disability, along with the complexity of their communication device, directly impacts adult and adolescents' attitudes toward a person using an AAC device (Beck et al., 2010; Carter & Maxwell, 1998; Gorenflo & Gorenflo, 1991; Lilienfeld & Alant, 2002). Therefore, it is important to teach typically developing peers the skills necessary for interacting with their classmates who rely on AAC in order to provide a shared language environment that allows all students a means to communicate easily and efficiently (Fossett & Mirenda, 2007).

A study by Chung, Carter, and Sisco (2012) investigated the natural occurrence of social interactions between 16 elementary and middle school students (i.e., nine elementary student, seven middle school students) with severe disabilities (i.e., autism and/or intellectual disability) using AAC devices and their peers. Observations took place in the general education classroom. Investigators found that the students with disabilities almost exclusively interacted with their assigned support staff (i.e., paraprofessional or special education teacher), despite being in close proximity to their peers. Furthermore, the students with disabilities rarely initiated social interactions and inconsistently responded to staff and/or peers. They also infrequently used their assigned AAC device (Chung, Carter, & Sisco, 2012). Thus, interventions should take into account ways to address both the social deficit as well as the communication problems for students with intellectual disabilities and/or autism; however, few have done so (Carter et al., 1998).

Ganz et al. (2012) performed a meta-analysis to determine the impact of AAC systems with individuals with an autism spectrum disorder. Out of the 24 studies included in the meta-

analysis, only two studies specifically addressed the impact of AAC devices on social skills. The vast majority of the studies focused solely on communication skills. The authors speculated that because communication and interactions are interconnected, "AAC interventions would have at least a modest effect on social skills as well" (Ganz et al., 2012, p. 69). The meta-analysis indicated a large effect for increasing social skills by targeting communication skills, suggesting the importance of AAC devices for individuals with poor expressive communication skills (Ganz et al., 2012). Garrison-Harrell, Kamps, and Kravits (1997) also investigated the effect of a peer network intervention with the use of an AAC device for three students with autism. Results showed an increase in the number of peer interactions, as well as the length of the interactions between the peers and the child with autism. A limitation of this study was that both the peer network and AAC device interventions were implemented simultaneously, and therefore, it is not possible to determine if one intervention was solely responsible for the increase in social interactions, or if the two interventions together were more powerful in promoting peer interactions than one of the interventions alone (Garrison-Harrell et al., 1997). A similar study by Carter and colleagues (1998), in which a peer support intervention was put in place for a child in kindergarten who used an AAC system also demonstrated that social interactions increased; however, it is unknown whether the peer support intervention without the use of an AAC would have displayed similar results. If these benefits are obtained without the need of the AAC it may save school districts and parents time and money (Parette & Murdick, 1998).

Clearly, while numerous studies have measured the effectiveness of AAC systems, the value of using these devices as part of peer mediated interventions still needs further investigation (Carter & Hughes, 2007). More students with developmental disabilities are being placed into inclusive classrooms than ever before (Fossett & Mirenda, 2007). "For inclusion to

be successful, all students-including those who communicate and write using AAC-must be able to participate in the learning and social opportunities of the general education classroom" (Fossett & Mirenda, 2007, p. 339). Peer support and network interventions may be a means of successfully integrating these students into the classroom, while additionally fostering their social, academic, and communicative skills.

Special Education Services

It is important to note that a diagnosis does not automatically qualify a student for special education services (PI 11.35[2][3], Wis. Stats). In order to qualify for special education services, under state and federal law, a child must meet the diagnostic eligibility criteria, and also have the need for special education services. Thus, special education services may be warranted if the child's needs cannot be met through the general education program, and/or the necessary modifications are not provided through the general education curriculum (PI 11.35[2][3], Wis. Stats). In other words, a child with a disability who is unable to have their needs met within the general education program would qualify for special education services.

Benefits of special education. Special education is specifically designed instruction for an individual with a disability, and meets the unique educational needs of the child (Friend & Bursuck, 1999). However, prior to the Education for All Handicapped Children Act of 1975 (Public Law 94-142) many schools refused to educate students with severe disabilities. In fact, before Public Law 94-142 was passed, approximately one million children with disabilities in the United States did not receive any type of schooling, while another four million did not receive appropriate educational support (Friend, 2005). Federal mandates are now requiring that all students, even those with disabilities, obtain higher learning standards (Salend, 2001). In order

to achieve this, the educational system must restructure their programs to ensure that all students are receiving the best, most effective services (Salend, 2001).

Presently, the trend in special education is toward inclusive practices, keeping the best interest of each and every student in mind (Friend & Bursuck, 1999). This trend coincides with IDEA (2004), which states that children must be educated in the least restrictive environment (LRE) with their general education peers, to the fullest extent possible. It is important to keep in mind that the LRE is focused on the student's educational needs rather than their disability (Salend, 2001). Placement into the LRE provides the opportunity for students with disabilities to be placed within the general education classroom, therefore, merging general and special education. Students should only be segregated when absolutely necessary (Salend, 2001).

Inclusive classrooms are not solely focused on students with disabilities, but when implemented correctly are designed to accommodate and meet the needs of the general education and special education students (Salend, 2001). The purpose of inclusion is to establish a collaborative, supportive, and nurturing environment for all students to learn in, while simultaneously teaching students to respect and learn about others' individual differences; thus, inclusion ideally promotes acceptance, sensitivity, and belonging among all students. Advocates of inclusion feel that removing students with disabilities from the general education classroom highlights their disability, interrupts their education, and makes them dependent on others (Friend & Bursuck, 1999).

Inclusive classrooms have many benefits as "the research and evaluation data on inclusion indicate a strong trend toward improved student results (academically, socially and behaviorally) for both special education and general education students" (Lipsky & Gartner, 1997, p. 197). First, students with disabilities placed within an inclusive classroom are more

academically engaged and exposed to academic activities (Salend, 2001). Luster and Durrett (2003) investigated the benefits of inclusion for students with disabilities attending school at highly inclusive districts compared to low inclusive districts. Results indicated a significant correlation between more highly inclusive districts and greater rates of academic performance in 8th grade, and attainment of high school diplomas (Luster & Durrett, 2003). Additionally, Fisher and Meyer (2002) found that participation in an inclusive school environment lead to significant gains in social competence and developmental outcomes compared to students with disabilities in a self-contained classroom. Specifically, students with disabilities placed within an inclusive environment made significant gains in their ability to initiate or participate in social interactions and handle adverse situations. Gains were also noted in motor skills, social-communication, personal-living, and community-living (Fisher & Meyer, 2002). While research has demonstrated some clear benefits promoting an inclusive special education environment, it is not without its limitations.

Limitations of special education. Despite the previously noted benefits of special education services, there are some potential drawbacks. Even though students with disabilities are entitled to be placed within the LRE, often they are completely secluded from their general education peers (Connor & Ferri, 2007). This seclusion can have harmful effects on students' socialization and sense of belonging. Furthermore, historically, special education classrooms have had low academic standards, resulting in poor outcomes for students with disabilities; for instance, secluded students with disabilities in have lower graduation rates and higher dropout rates in comparison to their general education peers (Lipsky & Gartner, 1997). Ysseldyke and Bielinski (2002) stated, "In every state (that summarized assessment data), and at each grade that data were available, the results indicated that a substantially smaller percentage of special

education students than general education students met state standards. Furthermore, within state, and across grades, the magnitude of the achievement gap grew steadily" (p. 190).

Compared to segregated classrooms, inclusive classes may provide better outcomes for students with disabilities (see Fisher & Meyer, 2002; Luster & Durrett, 2003). Still, while there are many benefits for having inclusive classrooms, this shift has limitations as well. General education teachers have expressed concerns toward inclusion including: negative attitudes from students without disabilities, lack of support and training, insufficient time to collaborate, large class sizes, and fear about not meeting the medical, behavioral, and academic needs of the students with disabilities (Salend, 2001).

Currently, the utilization of paraprofessionals is one of the primary modes of supporting students with disabilities in the general education classrooms, with many educators viewing it as a desirable solution, despite the lack of empirical support (Giangreco, 2010; Giangreco, Edelman, Broer, & Doyle, 2001; Suter & Giangreco, 2009; Tews & Lupart, 2008). Unfortunately, paraprofessionals are often not appropriately trained or provided with adequate supervision in order to effectively carry out their responsibilities (Giangreco et al., 2001; Suter & Giangreco, 2009). In addition, the overreliance on paraprofessionals may cause detrimental effects such as separation from peers, stigmatization, decreased academic engagement and self-esteem, and increased challenging behaviors (see Broer, Doyle, & Giangreco, 2005; Downing, Ryndak, & Clark, 2000; Giangreco, Broer, & Edelman, 2001, 2002; Giangreco & Doyle, 2007; Giangreco, Edelman, Luiselli, & MacFarland, 1997; Marks, Shrader, & Levine, 1999; Tews & Lupart, 2008).

Given both the benefits and limitation of special education and the push toward inclusion, further research must be done to determine the most effective way to include students with

disabilities within the general education classroom. Each year more and more children with disabilities are being placed into the general education classroom, as IDEA (2004) states that children must be educated in the least restrictive environment with their general education peers, to the fullest extend deemed appropriate (Snyder & Dillow, 2013). With this push for a more inclusive educational experience, it is crucial that researchers find the best approach to help these students succeed in these inclusive education classroom settings; however, determining how students with disabilities are able to fully participate both socially and academically, in a meaningful way, within these inclusive classrooms, remains a challenging undertaking (Carter et al., 2005).

Chapter 2: Literature Review

This chapter highlights the varying approaches used for the inclusion of students with significant disabilities (i.e., intellectual disabilities and/or autism) in the general education classroom, particularly for high school students. The topics covered in this chapter include: (a) the paraprofessional model, (b) peer support interventions, (c) peer network interventions, (d) benefits of peer-mediated interventions, and (e) the impact of peer-mediated interventions on communication skills. Finally, this chapter discusses the rationale for the present study and the research questions that will be addressed.

Paraprofessional Support Model

As previous noted, the paraprofessional support model is widely used, and has been viewed by parents and educators as an effective service delivery model for decades, despite the lack of scientific evidence (Suter & Giangreco, 2009; Tews & Lupart, 2008). Presently, the utilization of paraprofessionals is one of the primary modes of supporting students with disabilities in the general education classrooms, with many educators viewing the use of "one-to-one paraprofessionals as a desirable and supportive action" (Giangreco, 2010, p. 1; Giangreco, Edelman, Broer, & Doyle, 2001). Unfortunately, often times, paraprofessionals are not appropriately trained, not provided with adequate supervision in order to effectively carry out the duties they have been assigned, and frequently given inappropriate responsibilities, such as making instructional decisions (Giangreco et al., 2001; Suter & Giangreco, 2009). Ironically, this would not be deemed acceptable or appropriate if this situation occurred with students without disabilities (Giangreco, 2003).

It is often assumed that this model will increase both academic and social outcomes for students with disabilities; however, presently there is little support (Tews & Lupart, 2008). In

fact, the evidence for the use of paraprofessionals as an effective service delivery model for students with disabilities is negligible at best (Giangreco et al., 2001; Jones & Bender, 1993). The overreliance of paraprofessionals may even cause detrimental effects, such as (a) separation from peers, (b) dependency on the paraprofessional, (c) hindrance of relationships and interactions with their classmates, (d) decreased academic engagement, (e) increased stigmatization and teasing, (f) failure of personal identity and control, (g) provocation of problem behaviors, and (h) decreased autonomy (Broer, Doyle, & Giangreco, 2005; Downing, Ryndak, & Clark, 2000; Giangreco, Broer, & Edelman, 2001, 2002; Giangreco & Doyle, 2007; Giangreco, Edelman, Luiselli, & MacFarland, 1997; Marks, Shrader, & Levine, 1999; Tews & Lupart, 2008). Yet, as more children with increasingly severe disabilities are place within the general education environment, the paraprofessional model has become common and supported by teachers and parents alike (Suter & Giangreco, 2009; Werts, Harris, Tillery, & Roark, 2004; Wolery, Werts, Caldwell, Snyder, & Liskowski, 1995).

Given the limitations and potential negative effects of the paraprofessional service delivery model, it is vital that we find a better, alternative support system to meet the needs of students with disabilities being integrated into the general education classroom(s) (Giangreco, 2003). Peer-mediated interventions may be a promising alternative to the paraprofessional model, as they have been effective and beneficial for children with developmental disabilities (see Carter et al., 2005; Carter, Sisco, Melekoglu, & Kurkowski, 2007; Owen-DeSchryver, Carr, Cale, & Blakeley-Smith, 2008).

Peer-Mediated Interventions

A peer-mediated intervention (PMI) is a treatment method in which peers (e.g., classmates) are trained to implement academic support, behavioral interventions (e.g., modeling

appropriate behaviors and prompting and/or reinforcing target behaviors), and promote social interactions (Chan, Lang, Rispoli, O'Reilly, Sigafoos, & Cole, 2009; Garrison-Harrell et al., 1997). Peers may take on a variety of responsibilities, such as modeling appropriate behaviors, prompting, and reinforcing actions (Chan et al., 2009). Peer-mediated interventions have been shown to increase peer interactions and improve school engagement (Carter et al., 2007; Owen-DeSchryver et al., 2008). Carter et al., (2007) found that peer-mediated interventions are more effective in increasing peer socialization and school engagement than adult supported interventions. In fact, Carter, Sisco et al. (2008) found that peer interactions increased more during a peer-mediated intervention, when the special education staff member was not in proximity to the student with disabilities; however, proximity towards peers without disabilities, in general, does not alone lead to an increase in social interactions within the classroom (Kamps et al., 2002).

A study by Kamps et al. (2002) showed that students with autism had fewer and shorter interactions with untrained peers than with peers who had received training on how to interact with students on the autism spectrum. Other studies have demonstrated similar findings (see Owen-DeSchryver et al., 2008). Teaching peers how to interact with children with autism increases the chance that the child with autism will be involved in rewarding interactions, which in turn will reinforce the child to interact with others more often in the future (DiSalvo & Oswald, 2002). It also provides the child with opportunities to practice social behaviors. Therefore, it is important to utilize peers who demonstrate strong social skills, are able to follow instructions, attend school regularly, and are willing to participate in training (National Autism Center [NAC], 2011). While peer-mediated interventions have displayed their effectiveness in increasing peer socialization, "the communication skill of the individual with a disability is

unquestionably important to the success of the social interaction" (Pelphrey & Carter, 2008, p. 77).

There are two specific types of peer-mediated interventions relevant to the present study: peer support interventions and peer network interventions. These two particular types of peer-mediated intervention have been effective in improving the school experience for high school students with severe developmental disabilities (see Carter et al., 2005; Carter et al., 2007; Carter et al., 2009; Garrison-Harrell et al., 1997; Kamps et al., 1997).

Peer support intervention. Peer support interventions are proving to be an effective alternative to the conventional paraprofessional support model for students with severe disabilities in an inclusive classroom setting (Carter et al., 2005). A peer support intervention is a school-based intervention in which a nondisabled classroom peer assists a student with disabilities, under the supervision of a qualified instructional paraprofessional or teacher (Shukla et al., 1999). While there are various approaches to peer support interventions, they generally have the following features: (a) pairing of one ore more peers without disabilities with a student with disabilities, (b) teaching the typically developing peers how to modify or adapt classroom activities to allow the student with disabilities to participate, (c) help student's achieve IEP goals, (d) training and modeling appropriate social skills, and/or (e) fostering communication with other general education peers (Carter & Hughes, 2007). The peer supports receive continued guidance and feedback from paraprofessionals, special education teachers, and/or general education teachers, while they themselves assist their classmate with disabilities. Thus, the paraprofessionals role is able to shift to a position in which they are able to support all students in the classroom or complete other tasks, as requested by the teacher (Carter & Hughes, 2007).

Prior to the intervention implementation, teachers must first identify students with severe

disabilities that require assistance in order to fully participate in activities within an inclusive classroom environment (Carter, Sisco, et al, 2007; Shukla, Kennedy, & Cushing, 1999). Additionally, teachers or paraprofessionals must nominate peers without disabilities, in the same class as the focus student, who they feel would serve as effective peer supports (Carter et al., 2005; 2007). The number of peer supports used may vary from one, two, or even more; however, peer support interventions that use two peers versus one have demonstrated a greater increase in the number of peer interactions that took place within the classroom setting (Carter et al., 2005).

During the peer support intervention, the peer support students should remain in close proximity to the focus student (i.e., student with disability) throughout the entire class period (Carter et al., 2007). In the Peer Partners Project (P3), the classrooms were rearranged, prior to the implementation of the intervention, so that the peer support students and focus students were seated next to each other. While, proximity may increase ease of communication, proximity to peers alone does not lead to an increase in social interactions within the classroom (Kamps et al., 2002). Therefore, in order to best facilitate a peer support intervention, peer supports should also receive training prior to starting the intervention in order to be oriented to their support roles, understand the rationale for their involvement, and be taught ways to assist the focus student so they are able to participate in the classroom both socially and academically. During training sessions, the adult facilitator provides the peer supports with information about the focus student, such as their interests, communication, and varying ways they participate in class activities. No confidential information should be given out, such as information about the student's individualized education program (IEP). As previously noted, peer supports should be taught (a) how to adapt varying class activities in order for the target student to participate, (b) deliver

instruction pertaining to the focus student's IEP goals and/or behavioral intervention plan (BIP) (c) foster communication between the focus student and other peers, and (d) how to give feedback (Carter et al., 2007; Cushing & Kennedy, 1997). The paraprofessionals supporting the intervention should also be given a description of the peer support intervention, information about various techniques for promoting peer interactions, fading support when appropriate, and ways of providing feedback to the peer supports (Carter et al., 2007).

Peer support interventions have been effective and beneficial for children with developmental disabilities in increasing peer initiations and responses, fostering peer acceptance, and in improving school engagement (Carter et al., 2005; Carter et al., 2007; Frankel, Gorospe, Chang, & Sugar, 2011; Owen-DeSchryver et al., 2008). Shukla, Kennedy, and Cushing (1999) evaluated the effects of a peer support intervention in comparison to a one-to-one intervention, with either a paraprofessional or special education teacher, for middle school students with moderate to severe disabilities within an inclusive classroom. They found that a high frequency and longer duration of social interactions occurred during the peer support intervention (Shukla et al., 1999). Therefore, peer support interventions may be a practical method to increasing and improving social skills for students with disabilities (Shukla et al., 1999). Yet, there has only been one study conducted looking at the specific effects of a peer support intervention at the high school level (see Carter, Sisco et al., 2007). The present study will provide additional information about the use of a peer support intervention and possible communication gains for high school students with severe disabilities.

Peer network intervention. Peer network interventions take place outside of an inclusive classroom setting; for instance, this intervention may occur during lunchtime, as well as in the hallway between classes, or during a study hall. Peer networks offer a promising

approach for promoting social interactions beyond the general classroom setting and school day by creating a cohesive social group around the focus student (Garrison-Harrell, Kamps, & Kravits, 1997; Haring & Breen, 1992). While peer support interventions generally involve one or two peers without disabilities, functioning as a support to the focus student with disabilities, peer network interventions typically utilize three to six support students (Carter et al., 2005; Garrison-Harrell, Kamps, & Kravits, 1997). The goal of the peer network intervention is to promote a positive social environment for students with disabilities by creating a support system in which the student with disabilities can gain friendships and social competence (Garrison-Harrell et al., 1997).

A study by Garrison-Harrell et al. (1997) assessed the effects of a peer network intervention for three elementary children with autism using AAC devices. A multiple baseline design across settings, nested within a multiple baseline across focus students, was used to investigate increases in interaction time and expressive communication. Five peer networks were trained for each of the three students with autism (15 total), both on how to interact with the focus student (i.e., student with autism) using the AAC device and how to provide them with academic support. Peer network supports were determined based off social status and teacher nomination. In order to be included as a peer support, individuals had to obtain a minimum of four peer votes on the social status measure (i.e., voted as someone other students would like to play with "a lot"). Teachers were informed to keep the following information in mind when making nominations: high levels of (a) compliance, (b) school attendance, (c) social skills, and (d) expressive and receptive language skills (Garrison-Harrell et al., 1997).

Students serving as peers, as part of the peer networks, received training prior to implementing the intervention (Garrison-Harrell et al., 1997). The peer network training

involved training the peer networks on how to utilize the focus students' communication devices and training the peers on how to promote social interactions (e.g., initiating conversation, responding, and sustaining conversations). All observations occurred during scheduled play and academic times within the general education environment. The primary dependent variable was the duration of the social interactions between the focus student and peers. The duration of the social interaction began upon the first initiation and concluded five seconds after the last response. Both verbal and nonverbal interactions were included. In addition, the frequency of initiations and responses were collected, as well as the number of expressive verbalizations, or attempts made by the focus students. The expressive verbalizations were also coded for both intelligibility and functional use (Garrison-Harrell et al., 1997).

The study by Garrison-Harrell et al. (1997) contained five phases. In the pre-baseline phase (i.e., phase one) the primary investigator simply observed the focus students within each classroom in order to collect information on each child's communication and social interactions, in comparison to their typically developing peers. Phase two, baseline, also took place within the target students' classroom settings. Observational data, for phase two, was collected across all three settings for each target student. No attempt to facilitate interactions took place within this phase. During phase three, the target student was trained to use a low-technology AAC system. These one-on-one training sessions took place four times a week. Each session was 20 minutes. Training sessions continued until the target student achieved 80% accuracy labeling (either verbally or by pointing) a minimum of 10 preferred activity or item picture icons. Peer training took place during phase four. This phase took place after all of the target students achieved 80% accuracy on the AAC system. In phase four peer networks received training on the AAC device, used by the focus student, and social skills. Peer networks received eight, 30-minute training

sessions (see Table 1 for session content). The final phase, phase five, was the intervention implementation phase. During the implementation phase the focus student and the five-peer network students participated in a 20-minute cooperative group activity. These sessions took place between one to three times a day, either three or four days a week, depending on the multiple baseline design (Garrison-Harrell et al., 1997).

Table 1

Peer Network Training Session Content

Peer Network Training Sessions
Session 1. Discussed similarities and differences among students in classrooms, qualities of friendship, and activities to do with friends. Explained the purpose of the peer network—the importance of friendship, how to make friends, and how to use games and activities for the target student and classmates to improve learning and friendship.
Session 2. Discussed autism, how to be friends with students who are different. Read My Brother David and answered questions about the target student.
Session 3. Completed "circle of friends" activity—drew circle with names of close friends. Discussed friendship groups, listed circle of friends for the target student, and talked about ways for the network to assist the target student in making friends.
Session 4. Introduced social-communicative skills to the network peers. Social communications were defined, modeled, and role-played in this and each subsequent session. Defined skills were initiating and responding during conversations. Several examples of conversations were role-played and students helped develop conversational topics related to their interests and the target student. Students practiced conversations in dyads with prompting from the trainer in making eye contact, using names, and persisting in maintaining conversations.
Session 5. Introduced social skills of "saying something nice" and "sharing." Role-played positive and negative examples to teach appropriate interactions. Students practiced skills in dyads with board games, with trainer feedback and reinforcement for eye contact, using names, sharing items, and saying nice things to each other.
Session 6. Introduced "giving instructions" and "sharing ideas." Appropriate examples were modeled, and students practiced with partners, with feedback and reinforcement.
Session 7. Reviewed previously taught social skills (initiating, carrying on conversations, responding to conversations, saying something nice, sharing, giving instructions, sharing ideas). The trainer demonstrated ways to maintain contact with the target student when he

or she was nonresponsive. The network peers and the target student were then introduced to each other in the group and provided with board games to play. The session was videotaped, with feedback and discussion after viewing the tape on ways to maintain interaction.

Session 8. The network reviewed and practiced social skills with the target student in the group. The trainer introduced the augmentative communication system to the peers (prior instruction for the target students), and students practiced using the augmentative communication system and social skills. The session was videotaped with feedback from the trainer at the end of the session for the network peers was provided.

Note: Peer Network Training Session Content. Reprinted from "The effects of peer networks on social-communication behaviors for students with autism," by L. Garrison-Harrell, D. Kamps, and T. Kravits, 1997, *Focus on Autism and other Developmental Disabilities, 12*(4), 241-254.

Results from the study conducted by Garrison-Harrell et al. (1997) demonstrated that a peer network intervention utilizing an AAC system increased both the duration and frequency of interactions between focus students and their typically developing peers for all three elementary school students with autism in varying school settings (i.e., reading/language arts, computer skills, lunch, and recess). Results are illustrated in Tables 2 and 3. Target student verbalizations were assessed both at baseline and during the intervention phase using a 10-minute time sample; verbalizations were coded as either functional or non-communicative and intelligible or unintelligible (see Table 3). Functional communication increased for all three students, from baseline to the intervention phase, while unintelligible communication decreased (Garrison-Harrell et al., 1997).

Table 2

Mean Duration of Student Interactions

		Student 1		Student 2		Student 3	
		Baseline	Intervention	Baseline	Intervention	Baseline	Intervention
Site 1							
	Target Student	0	8.30	0	47.70	2.35	44.58
	Peer Networks	0	19.20	0	5.76	0	48.95
	Untrained Peers	0	n/a	0	.11	0	7.47
Site 2							
	Target Student	0.3	67.73	18.45	80.06	0	57.70
	Peer Networks	0.43	75.13	2.18	94.31	0	66.50
	Untrained Peers	0	44.46	.81	5.20	.44	.22
Site 3							
	Target Student	0	117.0	0	18.75	.10	0
	Peer Networks	0	117.0	0	12.12	0	0
	Untrained Peers	0	n/a	0	0	.10	0

Note: Peer Network Duration of Student Interactions. Adapted from "The effects of peer networks on social-communication behaviors for students with autism," by L. Garrison-Harrell, D. Kamps, and T. Kravits, 1997, *Focus on Autism and other Developmental Disabilities, 12*(4), 241-254.

Table 3

Number of Communicative and Unintelligible Words per Minute Averaged Across Sites

Vocalizations Across Sites		
Phase	Baseline	Intervention
Student 1		
Functional Verbalizations	1	40
Unintelligible Articulations	2	0.5
Student 2		
Functional Verbalizations	1.2	37
Unintelligible Articulations	4	1
Student 3		
Functional Verbalizations	2	3.2
Unintelligible Articulations	3	0.3

Note: Communicative and Unintelligible Words of Students in Peer Network. Reprinted from "The effects of peer networks on social-communication behaviors for students with autism," by L. Garrison-Harrell, D. Kamps, and T. Kravits, 1997, *Focus on Autism and other Developmental Disabilities, 12*(4), 241-254.

This study, investigating the effectiveness of peer network intervention on increasing social interactions, proved promising (Garrison-Harrell et al., 2007). Still, several limitations were noted. First, generalization of the intervention was not observed, as data was only collected during the treatment phases with the peer networks. Therefore, it is unclear whether social interactions increased during other times of the day, or if it only occurred in the presence of the peer network students. The P3 study does not assess the number of interactions that take place in the presence of the peer networks themselves, but observes the frequency of interactions within an inclusive classroom setting in which the peer network intervention is not presently taking place. Therefore, generalization of the intervention can be inferred, if the frequency of social interactions increases. Also, due to the complex nature of the study by Garrison-Harrell et al. (2007) it is unknown which component of the intervention was more effective in promoting social interactions (e.g., multiple peer networks, AAC system, peer training, etc.). Furthermore,

reinforcers were used during the AAC training, which may have impacted the number of interactions (Garrison-Harrell et al., 2007). Focus students in the P3 study were not trained on any type of communication system or device; therefore, the effectiveness of the peer network intervention on the target students' primary mode of communication can be examined.

The study by Garrison-Harrell et al. (2007) demonstrated positive benefits for using a peer network intervention for elementary aged children with autism. Similar gains were reported for older students (see Haring & Breen, 1992). Haring & Breen (1992) noted gains in both frequency of social interactions and appropriate responses for two junior high students with moderate to severe intellectual disabilities upon implementation of a peer network intervention. The intervention took place during unstructured times (e.g., transitions between classes, lunch, in the hallway before and after school) throughout the school day. Haring & Breen (1992) found that the social benefits were also maintained during the one and two month maintenance phase (Haring & Breen, 1992). During the maintenance phases, the peer networks were asked to suspend all data collection. Additionally, the teaching of specific skills was discontinued, the support meetings were decreased to every two weeks, and the network facilitator did not give any additional peer group assignments. Therefore, while support was faded in the maintenance phases, it was never completely discontinued. Another limitation of this study was that data was only collected during the times when the peer network students were with the target students. Thus, it is unknown as to whether the frequency of social interactions and appropriate responses generalized to other settings, when the peer network students were not present.

The P3 project, which the present study is based on, investigates the use of a peer network intervention for high school students with significant disabilities. To-date, the efficacy of a peer network intervention at the high school level, and the impact that this type of

intervention has on communication skills (i.e., receptive and expressive language) of students with cognitive disabilities and/or autism, has gone unexamined.

Benefits of peer-mediated interventions. There are a variety of benefits for using peer-mediated interventions. For instance, peer-mediated interventions have shown to be beneficial for children with disabilities in increasing socialization, communication skills, and academic engagement (Carter et al., 2007; National Autism Center, 2009; Neitzel, 2008; Owen-DeSchryver et al., 2008). Peer-mediated interventions also provide increased intervention access for students with disabilities, while simultaneously decreasing demands on teachers and/or paraprofessionals (Chan et al., 2009). Furthermore, peer-mediated interventions increase the number of social partners available to interact with students with disabilities, which creates additional opportunities to interact and socialize with other students in a variety of settings (Chan et al., 2009). Sasso and Rude (1987) found that by training socially popular peers to work and interact positively with students with intellectual disabilities, other non-trained peers within the classroom also began to interact more positively and frequently with the target child. Interacting with a variety of peers in multiple settings may also help promote generalization of skills (Carr & Darcy, 1990; Stokes, Doud, Rowbury, & Baer, 1987).

Peer support interventions are proving to be an effective alternative to the conventional paraprofessional support model for students with severe disabilities in an inclusive classroom setting (Carter et al., 2005). Shukla et al. (1999) found that when compared to the paraprofessional model, the peer-mediated intervention approach resulted in a higher frequency and longer duration of social interactions. Carter et al., (2007) also found that peer-mediated interventions were more effective to increase peer socialization and school engagement than adult supported interventions. Peer-mediated interventions are clearly valuable for students with

severe developmental disabilities; however, only two studies to date have investigated the use of peer-mediated interventions with high school students (see Carter et al., 2005; 2007). Further research is necessary in order to determine potential benefits for high school students.

Impact of Peer-mediated Interventions on Communication Skills

It is unclear whether peer support and peer network interventions, focusing on the high school students with severe developmental disabilities, demonstrate the same communicative gains as studies involving younger children (see Ben-Itzchak & Zachor, 2007; Zachor & Ben-Itzchak, 2010; Chung, Reavis, Mosconi, Drewry, Matthews, and Tasse, 2007). Chung et al. (2007) investigated the efficacy of a peer-mediated social skills training intervention program, combined with video feedback and behavior management, on increasing social communication skills for four boys with high-functioning autism, ages six or seven. The intervention ran for 12 weeks. A coding system was used in order to analyze the children's social behaviors. A direct observation system was used in order to code the frequency of social interactions. Coding including information on (a) acknowledged correct responses, (b) short correct responses, (c) elaborate correct responses, and (d) asking questions. Coding was also used to investigate appropriate and inappropriate social communication. The appropriate social communication subscales included: (a) contingent responses, (b) securing attention, (c) initiating comments, and (d) initiating requests. Inappropriate social communication subscales included: (a) topic change, (b) unintelligible, (c) other (e.g., animal noises and other vocalizations, repetitive utterances, echolalia), and (d) no response. Results demonstrated a significant improvement in social communication (i.e., reduction in inappropriate talking and increase in appropriate talking) for three out of the four participants. One child demonstrated gains in only one social communication subscale (i.e., initiating comments); however, all four children showed improvements in at least one of the social communication subscales. Three children also

demonstrated improvements in elaborate correct responses. This study demonstrates that social communications gains can be made using a peer-mediated social skills training program over a short period of time (Chung et al., 2007).

Another study by Trembath, Balandin, Togher, and Stancliffe (2009) conducted a multiple-baseline design with pre-school aged (ages three through five) children with autism to investigate the effectiveness of a peer-mediated naturalistic teaching intervention with and without a speech-generating device (SGD). The intervention conditions were (a) baseline (b) peer-mediated naturalistic teaching without an SGD, and (c) peer-mediated naturalistic teaching with an SGD. The intervention took place during playtime. Participants included six peers without disabilities and three children with autism, attending three separate pre-schools. All three children with autism attended school two days a week and none had prior access to a SGD. The peer-mediators were required to have appropriate language skills. Again positive results were noted. All three individuals with autism obtained significant communicative gains immediately following the introduction of the interventions (see Table 4). Communicative gains were also generalized to the lunchroom. Unfortunately, only one child maintained the initial communicative gains throughout the intervention phase. While all three children had significant communication gains upon intervention implementation, these gains slowly diminished for two of the children, as the intervention phase progressed (Trembath et al., 2009).

Table 4

Average Number of Communicative Behaviors Produced

			Jeremy	Aaron	Shane
Naturalistic teaching	Baseline	Number of sessions	4	11	9
		Communicative behaviors per minute (average)	0.48	0.34	0.31
		Communicative behaviors per minute (range)	0.1-1.1	0-0.7	0-0.5
	Intervention	Number of sessions	13	7	2
		Communicative behaviors per minute (average)	1.48	0.36	1.10
		Communicative behaviors per minute (range)	0.3-3.2	0.1-0.7	0.4-1.8
Naturalistic teaching with SGD	Baseline	Number of sessions	3	8	6
		Communicative behaviors per minute (average)	0.97	0.25	0.02
		Communicative behaviors per minute (range)	0.3-1.9	0-0.6	0-0.12
	Intervention	Number of sessions	10	8	3
		Communicative behaviors per minute (average)	2.11	1.19	0.53
		Communicative behaviors per minute (range)	0.9-4.2	0.2-3.1	0.3-0.9
Generalization	Baseline	Number of sessions	1	2	3
		Communicative behaviors per minute (average)	0.00	0.25	0.03
		Communicative behaviors per minute (range)	-	0.00-0.50	0-0.1
	Intervention	Number of sessions	1	1	1
		Communicative behaviors per minute (average)	0.90	1.00	0.05
		Communicative behaviors per minute (range)	-	-	-

Note. Frequency of Communicative Behaviors. Reprinted from "Peer-mediated teaching and augmentative and alternative communication for preschool-aged children with autism," D. Trembath, S. Balandin, L. Togher, and R.J. Stancliffe, (2009). *Journal of Intellectual & Developmental Disability, 34*(2), 173-186.

While peer-training programs have been effective for children between the ages of 3 and 14, as demonstrated, no studies have investigated program effectiveness for high school students (National Autism Center, 2009). It is also unknown how these interventions (i.e., peer support and peer network) may impact the communication skills of students with severe developmental disabilities who have communication deficits. To date, no studies have investigated receptive, expressive, and social communication gains for high schools students using peer-mediated interventions. Additionally, no studies have investigated whether high school students using an AAC system obtain the same gains in the number of social interactions and academic engagement as students with similar abilities without AAC devices.

In the future, peer-mediated interventions may also be used as a strategy to increase communication skills, in addition to social skills, if it is determined that high school students with language deficits also obtain communicative gains. Furthermore, it may offer guidance, as to which type of peer-mediated intervention (i.e., peer support or peer network) would be most beneficial for high school students with severe developmental disabilities and communication impairments. It is important to determine the efficacy of different types of peer-mediated interventions strategies for students that exhibit varying characteristics in order to determine the appropriateness of the intervention (Carter & Hughes, 2007). This information may also help practitioners better identify students that would benefit from these types of peer-mediated interventions

Research Questions

The objectives of the present study are to investigate whether high school students with severe developmental disabilities (i.e., intellectual disability and/or autism) who participated in peer support and peer network interventions facilitate gains in expressive, receptive, and/or

social language communication skills. The intervention outcomes will be examined using direct observation procedures that were conducted at baseline and again post-intervention and/or data from rating scales completed by teachers and parents (e.g., Vineland II, Social Skills Improvement System [SSIS]). Participants' peer interactions and academic engagement within an inclusive classroom are the principal outcome variables. In addition, determining the frequency of AAC use by students, and whether there are differences in outcomes for students who did or did not use AAC systems will be evaluated. This study addresses five primary research questions:

1. Do high school students with severe developmental disabilities who participate in peer support and peer network□interventions display improvements in expressive language skills compared to the control group, as measured by the pre- and post-intervention teacher Vineland-II Expressive Language Subdomain?
2. Do high school students with severe developmental disabilities who participate in peer support and peer network□interventions display improvements in receptive language skills in comparison to the control group, as measured by the pre- and post-intervention teacher Vineland-II Receptive Language Subdomain?
3. Do high school students with severe developmental disabilities who participate in peer support and peer network□interventions display improvements in social communication skills compared to the control group, as measured by the pre- and post-intervention teacher SSIS Communication Subscale?
4. Descriptively, do high school students' participating in peer support and network interventions, as well as students in the control group, who have low expressive language skills as measured by the pre-intervention teacher Vineland-II Expressive Language

Subdomain, who have (as indicated in the students' IEP) an AAC (augmentative and alternative communication) system, use the AAC within the classroom as recorded during observations at baseline and post-intervention, as indicated by the Observation Information Sheet (see Appendix E)? Additionally, are there differences in usage of the AAC device between the students in the peer support and peer network treatment groups versus the control group, as indicated by the Observation Information Sheet (see Appendix E)?

5. Do high school students with severe developmental disabilities using AAC devices that participate in peer support and peer network interventions demonstrate improvements in peer interactions and classroom engagement in comparison to students with AAC devices in the control group, as measured by pre- and post-observational data?

Chapter 3: Method

Overview

This study was drawn from a larger investigation designed by Erik Carter, Ph.D. (principle investigator) and Jennifer Asmus, Ph.D (co-principle investigator) titled, Peer Support and Peer Network Interventions to Improve Peer Relationships and School Engagement, abbreviated, Peer Partner Project (P3). The P3 is funded by the Institute of Education Sciences (R324A100133) with the primary purpose of evaluating the efficacy of peer-mediated interventions (peer support and peer network) for high school students with severe disabilities as compared to the general paraprofessional support model, commonly used within the educational system.

The present study investigates the impact of language ability on peer-mediated interventions for high school students with severe disabilities, using the P3 data collected over a four-year time period. Consequently, this study involves the same settings, participants, measures, and interventions as the P3. Therefore, in order to clearly understand the proposed study, an overview of the P3 design is first highlighted.

Peer Partner Project (P3)

The Peer Partner Project (P3) study uses a randomized control trial (RTC) to investigate the efficacy of peer support and peer network interventions for high school students with severe disabilities (i.e., autism and/or intellectual disability). The primary objectives of the P3 are to (a) compare the advantages of two peer-mediated interventions, (b) provide empirical evidence to support the benefits of peer-mediated interventions in comparison to paraprofessional supports, and (c) investigate perceptions of the interventions' effectiveness, feasibility, and acceptability. P3 is a four-year project and has included a total of 146 high school students with disabilities and

298 students without disabilities between the ages of 14 and 21.

Invitations were sent to all students with disabilities identified by administrators (i.e., special education case managers, special education director) who met the following inclusion criteria: (a) receiving special education services under a primary disability label of autism or intellectual disability (as defined by IDEA & Wisconsin and Tennessee state statutes), (b) eligible for the state's alternate assessment, and (c) enrolled in at least one general education class per day with paraprofessional or other adult support, excluding physical education. Upon consenting to participate, these students were randomly assigned to one of three conditions (i.e., peer support, peer network, or control). Prior to receiving any of the consent forms for the students with disabilities, a random list generator was used to note what number (e.g., one, two, or three) would be assigned to each condition (i.e., peer support, peer network, control). This was changed each semester, in order to prevent schools from knowing what number was assigned to each condition. The schools provided the research team with a list of students. Researchers then assigned each individual from that list to the numbers from the randomly generated list. Following this consent forms were distributed. Consent forms were specific to the condition the child was assigned. A list was then given to the school to indicate the students assigned to the varying conditions.

School staff was also responsible for nominating students without disabilities to be part of the study for two of the three conditions (i.e., peer supports and peer networks). No students were excluded from the study on the basis of gender, race/ethnicity, nationality, religion, or income. Informed consent was obtained from parents, school staff and peers.

One hundred forty-six students with severe disabilities (i.e., intellectual disabilities and/or autism) participated in the P3 study in total. These students were randomly assigned to one of

three conditions: peer support, peer network, paraprofessional/special educator support (i.e., control condition). Overall, there were a total of 51students in the peer support condition, 47 in the peer network condition, and 48 in the control condition. All conditions took place for only one semester; each semester new students were recruited to participate in the project (see Figure 1). Thus, all students within the peer support, peer network, or control condition only participated in the study for one semester. Each semester new participants were recruited for the study. Follow-up with a subset of measures was conducted one and two semesters following the intervention.

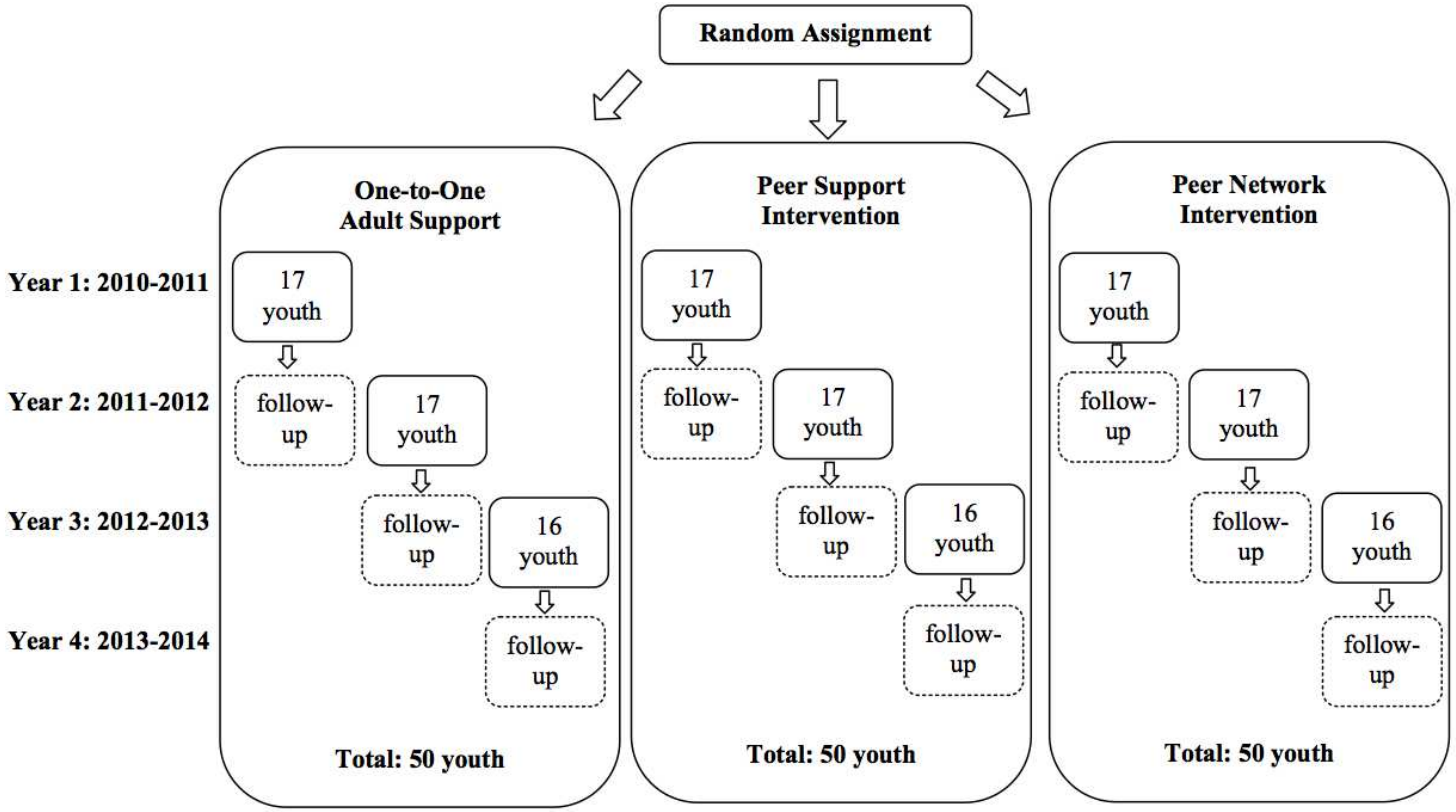

Figure 1. P3 Study Design. Reprinted from "Peer support and peer network interventions to improve peer relationships and school engagement," E.W. Carter, and J. A. Asmus, 2009, Madison, WI: University of Wisconsin-Madison.

In addition, a total of 298 general education students participated in the one of the peer support conditions, functioning as either a peer support (n = 106) or peer network (n = 192). In order to be eligible to serve as a peer support, students in the peer support condition had to be enrolled in the same class as the target student (participant with a severe disability). In order to be eligible for the peer network condition, students had to have a schedule opening that matched the time the peer network would meet on a weekly basis (i.e., lunch period). School staff, such as, general education teachers and special education personnel, nominated general education students, without disabilities, to serve as either a peer support or peer network participant. The participants for the P3 study were recruited from 12 high schools, comprising 9 districts in Dane County and 11 schools in and around Nashville, Tennessee. Student ethnicity and socioeconomic status was diverse across school settings (see Table 5).

Table 5

Peer Support, Peer Network, and Control Student Demographics

	Comparison (*n* = 48)	Peer Support (*n* = 51)	Peer Network (*n* = 47)
Gender[1]			
Female	15 (31.2%)	21 (42.2%)	17 (36.2%)
Male	33 (68.8%)	30 (58.8%)	30 (63.8%)
Grade level[1]			
Ninth	9 (18.8%)	9 (17.6%)	11 (17.6%)
Tenth	19 (39.6%)	19 (37.3%)	18 (37.2%)
Eleventh	15 (31.3%)	11 (21.6%)	10 (21.6%)
Twelfth	5 (10.4%)	12 (23.5%)	8 (23.5%)
Race/ethnicity[1]			
European American	32 (66.7%)	34 (66.7%)	34 (72.3%)
African American	8 (16.7%)	7 (13.7%)	6 (12.8%)
Asian American	4 (8.3%)	4 (7.8%)	1 (2.1%)
Native or Alaskan American	1 (2.1%)	2 (3.9%)	0 (0.0%)
Hispanic or Latino/a	0 (0.0%)	0 (0.0%)	4 (8.5%)
Other or multiple	3 (6.3%)	3 (5.9%)	2 (1.0%)
Eligibility for free/reduced-price meals[1]			
Yes	18 (37.5%)	14 (27.5%)	10 (21.3%)
No	29 (60.4%)	36 (70.6%)	37 (78.8%)
Missing information	1 (2.1%)	1 (2.0%)	0 (0.0%)
Primary or secondary disability category[1]			
Autism	17 (35.4%)	14 (27.5%)	22 (46.8%)
Intellectual disability	23 (47.9%)	28 (54.9%)	21 (44.7%)
Autism and intellectual disability	3 (6.3%)	7 (13.7%)	3 (6.4%)
Multiple disability	1 (2.1%)	1 (2.0%)	0 (0.0%)
Other developmental disabilities	4 (8.3%)	1 (2.0%)	1 (2.1%)
Children Autism Rating Scale-2[2]			
T-score	43.14 (7.82%)	48.5 (9.2)	47.88 (9.18)
Percentile ranking	27.48 (29.78)	47.1 (24.2)	41.98 (27.82)
Social Skills Intervention System[2]			
Social skills standard scores	84.73 (13.17)	83.3 (14.7)	80.53 (14.98)
Problem behaviors standard scores	118.40 (13.81)	118.7 (13.5)	119.23 (13.86)
Academic competence standard scores	79.35 (18.12)	76.1 (17.5)	78.47 (17.64)
Vineland Adaptive Behavior Scales[2]			
Communication standard score	64.58 (10.76)	62.8 (10.2)	62.91 (15.76)
Daily living standard scores	67.90 (12.19)	64.8 (11.8)	64.98 (17.39)
Socialization standard scores	71.50 (12.69)	69.1 (12.4)	69.11 (13.50)
Adaptive behavior composite scores	1.35 (0.56)	63.3 (10.8)	1.40 (0.50)

Frequency[1] (percentage). Mean[2] (standard deviation).

P3 used a variety of instruments and methods in order to classify students with severe disabilities and measure intervention outcomes. While school personnel identified students with severe disabilities (i.e. intellectual disability and/or autism), P3 utilized additional measures to help determine students' skill levels. These measures included: the *Childhood Autism Rating Scale, Second Edition* (*CARS2*; Schopler, Reichler, DeVillis, & Daly, 2010), the *Social Skills Improvement System* (*SSIS*; Gresham & Elliott, 2008), and the *Vineland Adaptive Behavior Scale, Second Edition* (*Vineland-II*; Sparrow, Cicchetti, & Balla, 2006) as well as a review of IEP and re-evaluation documents.

Parent and teacher questionnaires were utilized to assess (a) peer social contacts and friendships (b) classroom social status, (c) academic progress, (d) class participation and (e) community involvement; three direct observations pre and post (six observations in total) were utilized to assess intervention outcomes investigating (f) peer interactions and academic engagement; and an observation narrative form (completed at each pre and post observation) was utilized to assess intensity of support and use of AAC device. While the P3 study has utilized all of these outcome measures, the present study will only include instruments that directly relate to the assessment of language ability and social communication (see Table 6).

Table 6

P3 Assessment and Procedures Overview

Constructs and Measures	Pre-Intervention	Post-Intervention	Follow-Up
Peer interaction and academic engagement			
Three direct classroom observations	☑	☑	
Skill Assessments			
CARS2		☐	
SIS	☐		
SSIS	☑	☑	
Vineland-II	☑	☑	
Social Status			
Teacher Ratings	☐	☐	
Academic Progress			
Goal Attainment Scaling	☐	☐	
Social Connections/Friendships			
SSNF	☐	☐	☐
School Participation			
Teacher Questionnaire	☐	☐	☐
Community Participation			
Parent Questionnaire	☐	☐	☐
Observation Information Sheet	☑	☑	

Note. Components of present study are indicated with a checkmark.

CARS2 = *Childhood Autism Rating Scale, Second Edition* (Schopler, Reichler, DeVillis, & Daly, 2010), SIS = *Support Intensity Scale* (Thompson et al., 2009), SSIS = *Social Skills Improvement System* (Gresham & Elliott, 2008), Vineland-II = *Vineland Adaptive Behavior Scale, Second Edition* (Sparrow, Cicchetti, & Balla, 2006), SSNF = *School-Based Social Network Form* (Kennedy, 1991).

Present Study

The present study utilized the P3 data collected from Fall 2011 though Fall 2013, as only follow-up data was collected in the Spring of 2014. The focus of this study is to investigate whether high school students with severe disabilities (i.e., intellectual disability and/or autism) participating in peer support and peer network interventions display gains in communication skills, as compared to the control group. Previous studies have illustrated improvements in

communication skills for preschool and elementary school students participating in peer-mediated interventions (see Neitzel, 2008; Owen-DeSchryver, Carr, Cale, & Blakeley-Smith, 2008). Expressive and receptive communication skills were gauged using the Communication Subscale on the Vineland-II. The P3 administered the Vineland-II pre- and post-intervention; therefore, communication gains were assessed with this measure.

Social communication skills were evaluated through the Communication subscale on the SSIS. The P3 study also administered the SSIS to teachers at baseline and again post-intervention. Social communication gains were evaluated to determine whether peer support and/or network interventions increased social communication skills in comparison to control condition students. A quantitative approach using SPSS will be employed to analyze the data to determine if expressive, receptive, and social communication skills were improved as a result of the peer-mediated interventions.

This study also investigated the number of students who were identified as having an augmentative and alternative communication (AAC) device, as indicated in students' IEPs. Observational data was also collected to determine whether these individuals with AAC systems utilized them in the classroom pre- and post-intervention. This information was noted on the Observational Information Sheet (see Appendix E). This data was used to determine if students with expressive communication deficits used their AAC devices in the classroom prior to and during the peer support or peer network interventions, and whether there was an increase in social communication and academic engagement. A comparison was made between students using the AAC devices in the treatment groups and the control group in order to determine if students using their AAC system display greater improvements in the frequency of social interactions and amount of time engaged in academics. Social communication abilities were

assessed via three direct classroom observations, at baseline and at the end of the semester the in which the intervention was implemented (post-intervention). Observations took place over an entire class period (minimum observation of 30 minutes).

The goal of this study is to contribute to the knowledge about peer support and peer network interventions by determining whether high school students, with severe developmental disabilities, participating in these interventions also obtain additional communicative gains. The information attained by this study may help to determine what specific student characteristics predict communication gains more so than others. In addition, this study may help to promote the use of AAC devices. As noted, some parents may decline for their child to use an AAC system in fear that it may impede speech production; however, studies have indicated that the use of an AAC device does not hinder a child from learning or using speech (Beukelman, 1987; Schlosser & Wendt, 2008). While many studies have evaluated the effects of communication devices on language skills and the value of using an AAC system, this study will be able to add to the literature by documenting the use of AAC devices pre- and post-peer support and network interventions.

Participants

The research sample, for this investigation, consists of 146 students with severe disabilities (i.e., intellectual disability and/or autism). There were 51 students in the peer support condition, 47 in the peer network condition, and 48 in the control condition, which comprises the entire sample population from the P3 study. Therefore, the sample from the P3 and the proposed study are the same. Demographic data for the P3 study is depicted in Table 4. The participants were enrolled in the P3 study during the academic semesters beginning in the Fall of 2011 and going through the Fall of 2013, for a total of five semesters. All participants were currently

receiving special education services under the primary disability categories of either intellectual disability (n = 72) and/or autism (n = 53), as defined by IDEA (2004) and the Wisconsin and Tennessee state eligibility criteria (as diagnostic criterion was similar for WI and TN it is assumed that students would meet ID or autism criteria in both states). All focus students were enrolled in at least one general education class, with one-to-one paraprofessional, or other adult support (e.g., co-teacher). Additionally, all participants were eligible to take the state's alternative assessment (i.e., 1-2% of the students considered by the IEP team to be unable to participate in statewide assessments, even with accommodations).

Participant communication and socialization measures. Various measures were utilized at pre-intervention (baseline) and again at the end of the semester (post-intervention) in order to assess participant characteristics. Only measures relevant to the present study are described. The *Vineland Adaptive Behavior Scales, Second Edition* (Vineland-II; Sparrow, Ciccetti, & Balla, 2006) was given to teachers at baseline and again following intervention implementation (or end of semester for controls) and provides information on students' expressive and receptive language functioning. The S*ocial Skills Improvement System* (SSIS; Gresham & Elliott, 2008) was also given to participants' teachers at baseline and post-intervention for all students across conditions (PS, PN and control). The SSIS provides information on social communication skills (Gresham & Elliott, 2008). Direct observations occurred at baseline and at the end of the semester for all three groups in order to gain knowledge pertaining to the peer interactions and the characteristics of the participants.

Expressive and receptive communication functioning. Special education case managers completed the *Vineland Adaptive Behavior Scales, Second Edition, Teacher Rating Form,* (Vineland-II TRF; Sparrow, et al., 2006) at baseline and the end of the semester for all students

with disabilities. The Vineland-II is the updated version of the popular, well-established *Vineland Adaptive Behavior Scales* (Vineland ABS; Sparrow, Balla, & Cicchetti, 1984). The Vineland-II was used to measure participants' level of adaptive behavior (Sparrow et al., 2006). Adaptive skills are needed in order to perform daily activities and to be self-sufficient. The Vineland-II is available in three forms: Survey Interview Form, Parent/Caregiver Rating Form, and Teacher Rating Form (Stein, 2008). The Vineland-II TRF is appropriate for individuals age 3 through 21. All of the versions measure the same four broad domains of adaptive functioning: Communication, Daily Living Skills, Socialization, and Motor Skills. Data from the Motor Skills Domain was not collected, since this domain is intend for children ages six and under. The Communication Domain further consists of the Receptive, Expressive, and Written Communication subdomains (Stein, 2008).

The Expressive and Receptive subdomains are of particular interest to the present study. The Expressive subdomain was used as a predictor of verbal language ability in the analysis of Question 1, while the Receptive subdomain was used as a predictor of language comprehension in the analysis of Questions 2. The Daily Living Skills Domain on the Vineland-II TRF is comprised of the Personal, Academic, and School Community subdomains, and the Socialization Domain consists of the Interpersonal Relationships, Play and Leisure, and Coping Skills subdomains (Stein, 2006). The Daily Living Skills and Socialization Domains were not assessed in the current proposal.

The Vineland-II TRF was standardized using a group of 2,570 individuals between the ages of 3 and 18 (Stein, 2006). Teachers and daycare providers completed the forms. The sample is representative of the 2001 U.S. Census in gender, race, SES, region, and special education placement. While the Vineland-II TRF has been designed for administration to

children through the age of 21, they were excluded from the sample because the majority of 21-year-olds are no longer enrolled in school and are therefore not representative of their same age peers. Additionally, all of the Vineland-II measures were administered to samples of students with one or more clinical diagnoses (e.g., ADHD, Autism, EBD, LD, Hearing Impairments, Visual Impairments, and/or Mental Retardation) (Stein, 2008).

Like its predecessor, the Vineland-II was carefully designed to measure adaptive functioning; and the theoretical model, on which it is based, is well supported in research (Stein, 2008). The psychometric properties have been thoroughly investigated. Internal consistency, test-retest, and interrater reliability were all obtained for all of the Vineland-II forms. On all forms internal consistency reliability ranged from very good to excellent (i.e., 0.80s to 0.90s) for the Communication, Daily Living Skills, and Socialization Domains. Internal consistency was highest on the Vineland-II TRF form, ranging from 0.93 to 0.97 with a median of 0.95 (Widaman, 2008).

Test-retest reliability on the Vineland-II TRF fell between the good to excellent range (0.74 to 0.98) for all of the domains (Stein, 2008). Test-retest reliability for the subdomains ranged from fair to excellent (i.e., 0.60s to 0.90s). Interrater reliability was somewhat lower, falling within the modest range for the Adaptive Behavior Composite on the Vineland-II TRF (0.40s to 0.60s). Interrater reliability coefficients for domains and subdomains were similar or slightly lower (i.e., 0.40s to 0.60s). The rather low interrater reliability may be due to varying teacher views and thoughts about students' adaptive behaviors (Stein, 2008). While the interrater reliability is lower than desired, it is similar to the interrater reliability on other adaptive behavior instruments (Sattler & Hoge, 2006).

In addition, test content, test structure, concurrent validity, and diagnostic accuracy were

evaluated (Stein, 2008). The content of the Vineland-II domains and subdomains is consistent with the definitions highlighted by the American Psychological Association (APA) and other reputable groups (e.g., National Academy of Sciences). Furthermore, the developmental acquisition of skills and behaviors are appropriately allocated to the age-level domains and subdomains. The test structure, on all the forms illustrate moderately high correlations (0.70s to 0.90s) between the subdomains, domains, and Adaptive Behavior Composite, which demonstrates the strong influence of general adaptive behavior on each of the separate domains and subdomains. As would be expected, the subdomains, which comprise the composites, are also more highly correlated than the subdomains across composites (Stein, 2008). For instance, the expressive and receptive language subdomains are more highly correlated than the expressive and play and leisure time subdomains.

Concurrent validity was determined through comparing the Vineland-II with the earlier edition, Vineland ABS (Sparrow, et al., 1984) and other similar instruments (Stein, 2008). The correlations between all of the Vineland-II forms and the equivalent Vineland ABS forms were moderately high, ranging between 0.69 and 0.96 across domains, subdomains, and ages. This indicates that both measures endorse the same constructs. The Vineland-II TRF and the *Adaptive Behavior Assessment System, Second Edition* (ABAS-II; Harrison & Oakland, 2003) Daycare Provider Form and Teacher Form, indicate a moderate correlation (i.e., 0.52 to 0.70). The Communication and Socialization Domains were the most strongly correlated (Stein, 2008).

Diagnostic accuracy was also measured to determine if the scores on the Vineland-II were analogous to various clinical groups with specified diagnoses (e.g., mental retardation, autism, ADHD, emotional/behavioral disturbance, learning disability, and/or visual/hearing impairments) (Stein, 2008). Each of the Vineland-II forms indicated the ability to successfully

differentiate between clinical and nonclinical populations (Stein, 2008).

Social communication. Special education case managers completed the *Social Skills Improvement System* (SSIS), Teacher Form (Gresham & Elliott, 2008) in order to assess participants' social behaviors at baseline and at the end of the semester. The SSIS is a norm-referenced rating scale used to assess social behaviors necessary for school success (Doll & Jones, 2008; Gresham & Elliott, 2008). The SSIS is available in alternative forms (teacher, parent, and student) and can be re-administered, as early as four-weeks, to monitor intervention outcomes (Doll & Jones, 2008; Gresham & Elliott, 2008). The SSIS assesses four components: Social Skills Scale, Problem Behaviors Scale, Academic Competence Scale, and Autism Spectrum Subscale (Gresham & Elliott, 2008). The Social Skills Scale is the primary measure and assesses positive social behaviors, which are socially acceptable learned behaviors necessary to interact successfully with other individuals (Gresham & Elliott, 1990; 2008). The Social Skills Scale is comprised of seven subscales: Communication, Cooperation, Assertion, Responsibility, Empathy, Engagement, and Self-control (Doll & Jones, 2008; Gresham & Elliott, 2008). In the present study the Communication subscale is of particular interest. The Communication skill assesses social communication skills, for example, eye contact, turn-taking, initiates conversation, tone of voice, and politeness (Flowers, 2008). The Communication subscale score was used to indicate the participants' social communication skills in the analysis of Question 3.

The SSIS is a well-established measure, with a total normative sample of 4,700 students between the ages of 3 to 18 (Doll & Jones, 2008). The Teacher Form was specifically standardized using 950 of these children between the ages of 3 and 18 (Flowers, 2008). It is representative of the 2006 U.S. Census for "age, gender, ethnicity, geographic region, and

educational diagnosis" (Doll & Jones, 2008; Flowers, 2008). While the Social Skills Scale, on the Teacher Form, has the strongest internal consistency (α = 0.83 to 0.97); internal consistency across all other scales and subdomains is acceptable range from 0.73 to 0.97 (Doll & Jones, 2008; Gresham & Elliott, 2008). In addition, test-retest reliability was adequate on all forms, with a median adjusted correlation of 0.83 on the Teacher Form specifically, over a 43-day interval, and ranging from 0.74 to 0.93 on all other scales and subscales (Doll & Jones, 2008; Gresham & Elliott, 2008). Interrater coefficients ranged from 0.38 to 0.71 on all scales and subscales (Gresham & Elliott, 2008). Construct validity was also adequate as well as concurrent validity, as illustrated by strong correlations to other well-established comparable measures (e.g., *Vineland Adaptive Behavior Scales, Second Edition* [Vineland-II]; Sparrow, Ciccetti, & Balla, 2006) (Doll & Jones, 2008; Flowers, 2008). With strong psychometric properties the SSIS Communication subscale will serve as an adequate measure of students' social communication skills and whether the peer-mediated intervention improved participants' social communication.

Peer interactions. P3 staff conducted three classroom observations for each participant at baseline and again at the end of the semester in order to quantify the frequency and type of peer interactions and academic engagement. Thus, changes in social and academic engagement, resulting from the intervention, could be measured. All staff observers received extensive training prior to observing. In order to be deemed qualified to observe, staff members were required to receive 100% accuracy on a quiz covering the observational codes (see Appendix F). Additionally, they had to obtain a minimum of 90% interrater reliability with a master coder on three videos and 80% interrater reliability on a practice observation within an actual, live classroom with another qualified observer.

Direct observations are an effective method of data collection, as it provides researchers

and clinicians a means for evaluating individuals' functioning within a classroom environment, in an unobtrusive manner (Sattler, 2008). The frequency and type of observed initiations and responses serve as predictors of treatment effects for Question 5. The specific procedures used for this study are based on the work of Carter & Hughes (2005) and Carter, Sisco, and colleagues (2007, 2008).

Peer-Mediated Interventions and the Parapofessional/Special Educator Support Model

Participants in the current study were randomly assigned to one of three conditions: peer support, peer network, or paraprofessional/special educator support (control). A thorough description of each condition is provided, as well as a narrative of the training school staff received to help support the peer support and network interventions.

Peer support intervention. The peer support intervention used in the present study was developed and manualized by Carter, Cushing, and Kennedy (2009). The primary components of this particular peer support intervention included (a) recruiting peer supports, (b) orienting peer supports to their roles, and (c) pairing the peer supports and students with disabilities together for the semester that the intervention would be occurring. The general education teacher selected one or two peer supports to participate in the intervention. When selecting appropriate peer supports teachers where informed to consider several factors: (a) the focus student's goals and supports, (b) activities the students would participate in together, (c) student interests, (d) and the academic needs of the possible peer supports.

Following the selection of peer supports, the peer supports participated in an orientation session. The orientation session took place in a single 45-minute session outside of the classroom environment (e.g., during lunch, before school, after school). During the orientation phase, special education staff (peer support facilitator, often the paraprofessional) and

researchers provided general education students, who would be functioning as peer supports, with (a) an overview of the intervention and rationale utilizing peers support, (b) the limitations of confidentiality, (c) background information about their specific partner with disabilities, (d) an explanation of social and academic goals for their partner, (e) individual classroom expectations, (f) general support and instructional techniques, (g) strategies for increasing or motivating their partner's social interaction and class participation and ways of providing feedback, (h) recommendations for supporting the use of communication devices/systems, and (i) advice on requesting adult assistance (Carter et al., 2009).

The paraprofessional facilitated and supported the intervention by modeling supportive strategies and providing the peer support students with feedback about their implementation of these techniques. The peer support students and focus student were paired together every day for the remainder of the academic semester upon the implementation of the intervention. Thus, they sat together during class time and worked together when group work was permitted. Classrooms were rearranged as needed in order to ensure that the students sat next to each other during class. Prior to implementing the intervention, parent consent and student assent was obtained from the students with disabilities and peer supports.

Peer network intervention. The specific peer network intervention, implemented in this study was guided by the work of Breen, Kennedy, and Haring (1991) and Hughes and Carter (2008). The first step in creating a peer network was determining student/parent interest to participate and seeking ideas about the focus and composite of the network. In the peer network intervention, the adult facilitators select and form groups consisting of four-to-six general education students, to serve as peer networks, and one student with a disability (i.e., focus student). In order to select suitable general education peers to function as peer networks, school

personnel (e.g., general education teachers, special education teachers, and paraprofessionals) identified general education students that met at least one or more of the following specifications: (a) already knew or had prior interactions with the focus student, (b) had a schedule where they could meet weekly with the focus student, (c) shared general interests and hobbies with the focus student, and/or (d) were already part of a pre-existing, established social network. The P3 investigators obtained parent and student permission, prior to participating in the study.

Once the general education students for the peer network condition were recruited, they participated in an orientation session with the special education case manager or other school educator facilitating the group and the coach from P3 to orient the peer network students to the intervention. The orientation session took place in a single 45-minute session outside of the classroom environment (e.g., during lunch, before school, after school). During this initial meeting, the intervention facilitator was able to answer questions and describe the purpose of the peer network, provide background information about the focus student (e.g., interests, hobbies, preferences, abilities, and activities), and highlight the peer network students' roles. The peer network students were also able to discuss their daily schedules and arranged the time and location where they would be able to meet and spend brief time with the focus student regularly.

Weekly meetings between the interventionist, facilitator (school staff), and general education students also took place, generally lasting approximately 45 minutes. The purpose of these weekly meetings was to (a) debrief about the sessions with the focus student, (b) discuss methods for fostering the target student's school involvement, (c) share ideas for supporting the focus student, and (d) solve any difficult problems (e.g., problem-solve challenging behaviors or schedule changes) (Hughes & Carter, 2008).

Parapofessional/Special educator support model. The students with disabilities in the comparison condition continued to receive direct support from paraprofessionals or special education teachers, as they normally had at school throughout the day. These adult supports performed their various roles without any assistance from the P3 staff. Therefore, the adult supports did not receive any of the strategies or techniques that were shared with the peer support students (e.g., sitting near students during class, adapting activities and/or assignments, and providing one-to-one instruction).

Treatment Implementation Training

In order to ensure that the peer support and network interventions were implemented as intended, the P3 staff implemented a half-day training (approximately three hours total) for the educators and paraprofessionals responsible for treatment implementation. During the training sessions, the P3 staff discussed (a) the components of peer-mediated interventions, (b) peer recruitment procedures, (c) the roles of peer supports and networks, d) techniques for monitoring the students and ways to provide feedback, and (e) the assessment measures. In addition, all the intervention facilitators completed the education research human subjects training (i.e., training modules published by the Collaborative Institutional Training Initiative [CITI]; Braunschweiger, 2013).

Following the initial training session, the P3 interventionists provided educators and paraprofessionals with further on-site support within the classroom settings, while the intervention was being implemented. At this time the P3 interventionists answered any questions the facilitators had and provided coaching, when necessary, to guarantee the interventions were implemented with fidelity. A fidelity checklist was also completed by the facilitators (weekly) and observers (during the three observations at the end of the semester) in order to verify that the

intervention procedures were implemented as intended (see Appendix G and Appendix H for the Peer Support and Peer Network Fidelity Checklists). Facilitators were also asked to track and note any variations or changes that were made to the intervention. The P3 coaches completed between three to six site-visits throughout the semester, in order to complete the fidelity checklist and discuss any issues regarding intervention implementation with the facilitators. All questions and concerns about implementation fidelity were discussed at a weekly research meeting with the principle investigators.

Dependent Measures

Direct classroom observations were conducted for all of the target students participating in the study. Each focus student was observed in only one general education classroom (either academic or elective), where they received support from either a paraprofessional or special educator. The actual observations started when the instructional bell rang and the students entered the classroom. Both pre and post-observations were completed within a two-to-four week period. Thus, three observations took place at baseline and again at the end of the semester.

Trained observers, using Dell Inspiron Duo touchscreen computers, collected observational data. These handheld computers were equipped with Lily Data Collector and MOOSES software programs. These programs allowed for the concurrent recording of event- and duration-based data, which aides in data analysis (Tapp et al., 1995). During the observation, the observers positioned themselves in the back or the side of classroom, depending on the physical layout of the rooms, in order to decrease the obtrusiveness and distractions caused by having other individuals in the class. Observers collected data on peer interactions (i.e., initiations and responses by peers, peer supports, and focus students) and the academic

engagement of students with disabilities (see Appendix F for specifics). The coding definitions that guided data collection were based on the work of Carter, Hughes, and colleagues (2005) and Carter, Sisco, and colleagues (2007, 2008). These codes were additionally developed and modified by the P3 principle investigators. The coding definitions utilized for the P3 study were assembled into a detailed manual and presented to observers at the beginning of their training (see Appendix F for the complete manual of coding definitions).

Initiations and responses. Initiations and responses were defined as any verbal or nonverbal action directed toward a peer, with a clear communicative intent. All conversational turns were recorded as separate occurrences. There was no requirement as to the general length of the utterance. Interactions were coded as *initiations* when an initial, or new, interactive action was displayed by the focus student toward a particular peer(s)/peer support(s), or made by a specific peer/peer support toward the target student *with a clear communicative goal of eliciting a response*. Initiations were recorded when a student (a) changed topics, (b) made a comment after five seconds had elapsed, since the prior initiation or response, and/or (c) if the target student joined a conversation. All initiations made by the focus student were recorded, even when a paraprofessional or classmate prompted the initiation.

Responses were defined as any communicative action (e.g., facial expression, verbal utterance, sign, or AAC use) made by the focus student, peer support/network, or peer(s) without significant disabilities that came directly after an initiation or response, made by a peer(s) or focus student. The response may or may not have been related to the conversation or question, but must have had a communicative purpose. Again, responses made by the focus student could occur either with or without prompts. Comments made within five seconds of the previous utterance were coded as responses.

Both initiations and responses were coded to indicate the individual (i.e., peer, peer support, or focus student) making the contribution (i.e., initiation and/or response). It is also important to note that neither initiations nor responses were recorded for self-talk (e.g., reading aloud to oneself), echolalic behavior, and conversations with adults (e.g., teachers, paraprofessionals). Additionally, initiations and responses by the focus student to other peers with obvious significant disabilities were not recorded. Since peer supports were not yet determined during the baseline phase, there was no differentiation between interactions with peers and peer supports during this phase for the PS condition. All interactions during baseline were coded as peer interactions.

Interaction topic. Initiations and responses between target students and peers or peer supports were coded as *task-related* when they referred to activities, materials, or expectations that pertained to the current class (e.g., class assignments, projects, and/or course content). Interactions irrelevant to the present class instruction were coded as *social-related* (e.g., social media, other classes, comments about peers and school activities).

Instructional format. The instructional format reflected the instruction that was received solely by the focus student, meaning that the instructional format did not always coincide with the instruction for the rest of the class. Duration recording was utilized to assess instructional format. The instructional format was coded for the focus student at the beginning of the observation. The instructional format was only changed when the instruction changed and remained for over five seconds, and when there was a convincing reason to change the code. If the instructional format would be changing back to the original code quickly, the code was not changed, even if the format change took longer than five seconds. Instructional formats included: large group, small group, independent work, 1:1 peer, 1:1 adult, no instruction, and

gone (see Appendix F for further details).

Academic engagement. The focus students' engagement was also measured using duration recording. This code remained the same unless there was a necessary reason to change. When the target student was actively involved in or attending to instructional activities and materials that were identical or similar to the content provided to the majority of the class the *engaged with consistent instructional activities* code was used. In addition, this code was used when the target student was completing coursework that was modified, but consistent with the general education curriculum. Examples included, listening to the teacher's lecture, reading a book consistent with the course content, and completing appropriately adapted worksheets over the same content as the other students in the class.

Focus students were coded as *engaged with inconsistent instructional activities* when they were attending to instructional activities that were assigned by the general education teacher or paraprofessional and did not closely coincide with the educational activities being delivered to the rest of the class. Examples of engagement in inconsistent instructional activities included completing assignments not related to class content (e.g., coloring), or completing work for another class.

Lastly, target students were coded as *unengaged in instructional activities* if the student was not actively participating in the educational activities and/or tasks, or when the target student was actively engaged in other activities or materials that were not assigned. Examples included the student walking around the room, staring at something, and sitting in their seat without anything to work on or do.

Proximity. The proximity code used duration recording to track the time and individuals in close proximity (i.e., about three feet) to the target student. This code was only changed after

five seconds had elapsed, since an individual moved in or out of proximity to the focus student, and when there was a necessary and compelling reason to change the code. This code specifically measured when the target student was in proximity to peers/peer supports/networks, and/or special education teachers/paraprofessionals. Again, it is important to note that peer supports were not yet determined during the baseline phase; therefore, there was no differentiation between interactions with peers and peer supports during this phase. This differentiation only occurred during the post-intervention phase for target students participating in a peer support condition.

Observational Information Sheet. As part of the observation the observers also completed the Observational Information Sheet, which provided further information about the observations (see Appendix E). This sheet provides more specific information about the interactions than what was obtained with the computer system, such as (a) the number of peers with whom the student interacted, (b) a rating of the quality of the interaction, (c) a record of support behaviors provided by paraprofessionals and peers, (d) information about the topics covered by the target student and peers, and (e) narrative information about the activities that took place during the observation, negative interactions, and challenging behaviors that may have occurred. Classroom features were also documented on narrative forms (e.g., curricular activities, number of students and adults in the classroom) as well as whether or not an AAC device was used during the observation.

Procedures

In order to recruit schools to participate in the study, the P3 project staff met with the high school representatives (i.e., administrators and special education coordinators) to provide a general overview of the study and explain the inclusion criteria for participants. Following this,

a designated school representative (e.g., special education coordinator) identified students at the school that met the specified inclusion criteria. These students were randomly assigned to one of the following conditions (a) peer support, (b) peer network, (c) or comparison. As previously noted, a random list generator was used to determine what number (e.g., one, two, or three) would be assigned to each condition (i.e., peer support, peer network, control). This was changed every semester, in order to prevent schools from discovering what number was assigned to each condition. Researchers then assigned each individual the school identified that fit criteria to the numbers from the randomly generated list. After random assignment, parent consent and student assent was obtained. Consent forms were specific to the condition the student would be in. The school staff also identified students without disabilities to participate in the peer support and peer network conditions. Parent and student consent was also obtained for these participants.

Observation procedures. One of the primary dependent measures for this study is the direct student observations. Trained P3 staff conducted the direct observations. Additionally, ongoing training continued throughout the study to ensure that the coding remained consistent throughout the study. Interobserver agreement was also assessed throughout the data collection.

Observer training. Twenty-one graduate level research assistants or masters-level staff carried out classroom observations across the sites in Wisconsin and Tennessee. All of the observers attended a series of data collection training sessions. During these session the observers were required to (a) learn the operational definitions of target behaviors, (b) review scoring examples, (c) complete quizzes over the operational definitions and codes, (d) practice data collection procedures using videotaped scenarios and in vivo situations, and (e) discuss any discrepancies. During the training sessions, trainees were also able to ask any questions they had

about definitions, procedures, and scoring discrepancies. Before the trainees were allowed to perform actual observations for the P3 study, they were required to achieve 90% or higher reliability on three consecutive videotaped sessions and 80% during an in vivo training session conducted with a master coder. Furthermore, observers were required to receive 100% accuracy on a quiz covering the observational codes (see Appendix F for observational codes). Observers participated in periodic refresher trainings in order to maintain high reliability and consistency with the observational definitions.

Interobserver agreement. Interobserver agreement (IOA) was obtained in order to determine interrater reliability. Interobserver agreement was established by having two observers simultaneously, but individually, collected observational data using identical procedures (see Appendix F). Observations utilizing IOA were balanced across all intervention conditions and participating schools. IOA was obtained on 30% of all the observations. IOA was calculated by dividing the number of agreements by the number of agreements plus disagreements and multiplying the total by 100% (Kazdin, 2011). Observer responses coded more than five seconds apart were determined as a disagreement.

Data Analysis

A quantitative approach was used to examine research questions. Participate data were stored in a locked filing cabinet, maintained within a secure office. All data were organized into SPSS. Data for Questions 1, 2, and 3 were imported into Hierarchical Linear and Nonlinear Modeling 7 (HLM 7; Raudenbush, Bryk, & Congdon, 2010). Multilevel modeling was used to evaluate the effectiveness of peer support and peer network interventions in increasing expressive and receptive language skills, as well as, social communication in high school students with severe developmental disabilities.

A two-level hierarchical linear model (HLM) was used to answer Question 1, 2, and 3 (Bryk & Raudenbush, 1992). The Level 1 variable was the participant and included 146 students. The Level 2 variable was the school and included 23 schools. Questions 4 and 5 were analyzed using descriptive statistics to determine if students who had and AAC, as indicated by the IEP, used the AAC in the classroom and whether students with AAC devices demonstrated an increase in the frequency of peer interactions and the amount of time engaged in academics. In addition to the HLM procedures tables, figures, and graphs were used to illustrate study findings.

Descriptive statistics were used to determine the number of students with low expressive language skills (as indicated by the Vineland-II) that utilized an AAC device during the pre-treatment and intervention phase (i.e., Question 4). In order to determine the number of students that use an AAC system, the IEPs for students with low expressive language skills were investigated. For students identified as having an AAC system, the Observational Information Sheet (see Appendix E) was used to determine if an AAC device was used during the pre- and post-observations. Out of the 146 focus students participating in the larger P3 study, 30 students were identified as requiring an AAC (based off IEPs). Due to the small sample size of individuals using AAC devices, descriptive statistics were used to document changes in the number of interactions and time engaged in the classroom from pre- and post-intervention, in order to answer Question 5.

All participant data is stored in secure offices within locked filing cabinets. SPSS was also used to assist in the electronic storage and organization of data. Participants' are given identifying codes, and therefore names are not linked to student information entered into SPSS to help maintain confidentiality.

Chapter 4: Results

This study investigated the effects of peer-mediated interventions on high school students with severe disabilities (i.e., intellectual disabilities and/or autism). The purpose was to determine if peer support and peer network interventions lead to an increase in receptive, expressive, and/or social communication skills. Additionally, this study was conducted to determine if students with an AAC device, as indicated in the IEP, utilize these devices at school and whether individuals with AAC systems obtain gains in the frequency of social interactions and time engaged in class activities. To evaluate intervention effects pre and post, adaptive and social rating scales were administered to teachers for all participants. Observations were also conducted for all participants, pre and post-intervention. Outcome (dependent) variables include participants' receptive, expressive, and social communication skills, as indicated by the Vineland and Social Skills Improvement System (SSIS), peer interactions (task initiations, social initiations, task responses, social responses) and academic engagement (consistent activities) within inclusive classrooms. In this chapter, descriptions of the statistical models are presented along with an explanation of how they relate to the research objectives. Tables, figures, and graphs are also included to illustrate findings.

Descriptive Statistics

One hundred forty-six high school students with severe disabilities participated in this study. Students were randomly assigned to one of three conditions: peer support (n = 51), peer network (n = 47), and treatment as usual (TAU) (n = 48). Additionally, 106 students functioned as peer partners in the peer support intervention. Each target student in the peer support condition was assigned between one and four peer partners (M = 2.1). Another 192 students acted as peer partners in the peer network condition. All target students in the peer network

condition were assigned between three to six peer partners ($M = 4.1$). Teachers completed behavior and social rating scales on all participants prior to the start of the intervention and following the completion of the intervention. All participants were also observed in inclusive classrooms on six occasions (three times at baseline and three times at post-intervention).

Treatment Integrity

At the beginning of each semester intervention facilitators completed both intervention and CITI research trainings (Braunschweiger, 2013) led by P3 research staff. The CITI training was reviewed by the P3 staff and then completed independently by each facilitator. Average length of facilitator training for the peer support condition was 2.5 hours and 2.6 hours for peer networks respectively. Following facilitator training, students without disabilities were invited to participate as peer partners. When an adequate number of typically developing peers agreed to participate in the intervention, and submitted consent forms, the facilitators provided them with training on how to be a peer partner. On average, training for the peer supports lasted 34 minutes (range, 15-60 minutes) while trainings for the peer networks lasted 34 minutes (range, 20-60 minutes).

Peer support and network interventions were carried out across one academic semester. The length of each intervention varied slightly for each participant; however, all interventions were implemented for a comparable number of days. Treatment integrity data for the peer support and peer network interventions were collected by intervention facilitators and specialists using Fidelity Checklists. The Fidelity Checklists were completed by the facilitators once a week, while intervention specialists completed them three to six times per each semester. Additionally, observers completed Fidelity Checklists for the peer support intervention during

the three post-intervention observations. Observers did not complete Fidelity Checklists for the peer network condition, as observations were performed within the inclusive classroom settings.

In order to verify that the intervention was being implemented with fidelity, the intervention coach and peer support facilitator completed a Fidelity Items Checklist. The Fidelity Checklist items were based off of key components that were needed in order to ensure that the interventions were implemented as designed. Important features for the peer support conditions included having the facilitator support the peer supports, as well as, ensuring that the peer support was in close proximity to the target student (see table 7). The fidelity of the peer support intervention, as measured by facilitators, averaged 96.2% (*SD* = 11.4%) across all participants, while fidelity averaged 87.6% (*SD* = 16.5%) when assessed by research staff functioning as intervention coaches.

Table 7

Fidelity Items for Peer Support Interventions

		Data source			
		Intervention coach		Peer support facilitator	
	Fidelity indicators	*M*	*SD*	*M*	*SD*
Facilitator-implemented items	Facilitator recruited at least one peer for the intervention[1]	100.0%			
	Facilitator addressed all topics at the initial peer orientation meeting[1]	100.0%			
	Facilitator supported peer supports and the student[1]	88.6%	24.7%	97.5%	8.6%
	Facilitator provided reminders/feedback to peer supports before, during, or after class[2]	66.6%	32.3%	95.3%	12.9%
	Facilitator facilitated interactions during class when appropriate[2]	64.0%	33.8%	91.7%	20.4%
	Facilitator monitored students during class[2]	87.2%	26.1%		
	Facilitator provided praise and feedback to students during or outside of class[2]	62.4%	33.4%	94.1%	10.6%
Peer-implemented items	Peer partners were in close proximity to the focus student during class[1]	87.8%	24.6%	96.7%	10.4%
	Students sat next to each other[2]	84.4%	29.5%	89.5%	21.6%
	Students remain in close proximity during out-of-seat class activities[2]	63.2%	39.8%	85.4%	24.4%
	Students joined the same group during group activites[2]	63.0%	43.6%	84.2%	27.0%
	Peer partners interacted with the focus student in class[1]	88.9%	22.0%	93.9%	20.5%
	Peer partners greeted the focus student[2]	78.1%	27.9%	91.9%	22.5%
	Students engaged in the conversation[2]	71.3%	34.1%	83.1%	28.9%
	Peer partners included the student in interactions with other peers[2]	21.0%	29.1%	59.7%	34.2%
	Peer partners assisted the focus student academically[1]	79.9%	27.5%	89.3%	24.2%
	Peer partners helped the student participate in class activities[2]	61.7%	35.3%	82.0%	28.0%
	Peer partners repeated or rephrased instructions for the student[2]	42.8%	33.6%	66.1%	38.8%
	Peer partners appropriately prompted the student[2]	60.7%	36.0%	74.6%	31.1%
	Peer partners provided appropriate feedback to the student[2]	48.4%	35.0%	79.2%	30.1%
	Student worked together on classroom activities[2]	40.9%	35.3%	74.3%	34.5%
	Students shared work materials[2]	32.9%	31.1%	62.3%	39.9%

Note. Statistics in this table were calculated from means of the fidelity measures collected for each participant. The standard deviations signify the variation in means of all participants.
Core intervention components[1]Sub-components of the core component[2]

A Fidelity Items Checklist was also created to verify that the peer network intervention was being implemented with fidelity. In order to verify that the intervention was being implemented with fidelity, the intervention coach and peer network facilitator completed a Fidelity Items Checklist. The Fidelity Checklist items were again based off of key components that were needed in order to ensure that the interventions were implemented as intended, such as having at least two peers attended the network meetings, and ensuring peer partners and target students interacted during the meetings (see table 8). The fidelity of the peer network intervention, as measured by research staff, was high, averaging 95.9% (*SD* = 7.4%) across participants.

Table 8

Fidelity Items for Peer Network Interventions

		Data source			
		Intervention coach		Peer support facilitator	
	Fidelity indicators	*M*	*SD*	*M*	*SD*
Facilitator-implemented items	Facilitator recruited a minimum of two peers for the intervention[1]	100.0%			
	Facilitator addressed all topics at the initial peer orientation meeting[1]	100.0%			
	A minimum of two peers attended network meetings[1]	88.9%	24.9%	88.7%	21.6%
	Facilitator supported peer supports and the student[1]	99.3%	3.1%	99.5%	3.7%
	Facilitator provided structure and facilitated the meetings as needed[2]	94.8%	16.1%	93.7%	13.8%
	Facilitator checked with peer partners weekly about student interactions[2]	95.7%	9.9%	93.3%	15.2%
	Facilitator monitored interactions during the meeting[2]	95.0%	10.2%	97.2%	9.9%
	Facilitator provided praise and feedback to students (during or outside of the meeting)[2]	93.4%	12.2%	84.4%	21.2%
Peer-implemented items	Peer partners and the students interacted during the meeting[2]	98.2%	7.5%	97.7%	9.3%
	Students greeted each other[2]	96.0%	9.8%	90.8%	17.6%
	Student initiated interactions with peer partners[2]	73.8%	35.5%	81.1%	29.8%
	Peer partners initiated interactions with the student[2]	96.5%	9.5%	95.4%	11.6%
	Students engaged in a game or activity together[2]	83.1%	25.9%	77.6%	28.4%
	Students engaged in a game or activity together	96.9%	9.2%	88.5%	22.2%
	Peer partners and the student reported interactions occurring outside of the meeting[1]	92.6%	13.1%	91.5%	15.3%
	Student initiated these interactions[2]	60.9%	38.4%	56.0%	43.7%
	Peer partners initiated these interactions[2]	92.0%	12.9%	92.2%	14.9%
	Interactions between peer partners and the student were considered reciprocal[2]	83.0%	22.1%	79.1%	28.5%
	Interactions occurred at least once per day[2]	68.1%	31.4%	67.4%	37.7%
	Interactions occurred between more than one peer partner and the focus student[2]	81.5%	26.2%	79.3%	31.9%

Note. Statistics in this table were calculated from means of the fidelity measures collected for each participant. The standard deviations represent the variation in means of all participants.
Core intervention components[1]Sub-components of the core component[2]

On average treatment integrity was high (above 85%) for peer support and peer network interventions in all areas that were evaluated. If research staff had concerns about treatment integrity, the intervention specialists would meet with facilitators to provide feedback, clarity on intervention procedures, and answer questions. Data regarding treatment integrity for the peer support and peer network interventions are presented in Tables 7 and 8.

Primary Statistical Analysis

All data, for Questions 1, 2, and 3, were organized in SPSS and then imported into Hierarchical Linear and Nonlinear Modeling 7 (HLM 7), a statistical software package created by Raudenbush, Bryk, & Congdon, (2010) distributed by Scientific Software International (SSI). No data were missing, so no action was needed to treat missing data.

Data in this study have a multilevel data structure comprising two levels of nesting. The first level (within-person) contains data collected on rating scales at pre- and post-intervention (i.e., *VASB, SSIS*) for each participant and represents differences observed from baseline to post-intervention. The Level 2 (between-persons) model explains Level 1 intercepts (i.e., baseline level) and slopes (i.e., changes from baseline to post-intervention) in relation to person-level variables (i.e., peer support versus TAU; peer network versus TAU) across schools.

Multilevel modeling was used to conduct the primary analysis in response to Questions 1, 2, and 3. Question 1 concerns the relation between expressive language skills (within-person) for students in peer support, peer network, and TAU conditions, at different schools (between-persons). Question 2 addresses the relations between receptive language skills (within-person) for students in peer support, peer network, and TAU conditions in various schools (between-persons), and Question 3 investigates the relationship between social communication skills (within-person) for students in peer support, peer network, and TAU conditions across schools

(between-persons). Therefore, HLM was utilized, as this data structure allows for a simultaneous estimation of variations at each data level while also controlling for person-specific factors (Rauenbush & Bryk, 2002).

Random coefficients regression model for question one.

Level-1 Model

$$PostVASB\_EL = \beta_{0j} + \beta_{1j}*(PEERSUPP_{ij}) + \beta_{2j}*(PEERNETW_{ij}) + \beta_{3j}*(PreVASB\_EL_{ij}) + r_{ij}$$

Level-2 Model

$$\beta_{0j} = \gamma_{00} + u_{oj}$$
$$\beta_{1j} = \gamma_{10}$$
$$\beta_{2j} = \gamma_{20}$$
$$\beta_{3j} = \gamma_{30}$$

Mixed Model

$$PostVASB\_EL = \gamma_{00} + \gamma_{10}*PEERSUPP_{ij} + \gamma_{20}*PEERNETW_{ij} + \gamma_{30}* PreVASB\_EL_{ij} + u_{oj} + r_{ij}$$

Where:

PostVASB_EL = Dependent variable (i.e., Post Vineland expressive language score) measured for student *j* in *i* school

β_{0j} = Intercept for student *j* in the control condition (i.e., the reference group) indicating the mean of the residualized gain on VABS_EL (i.e., post socres when controlling for pre-intervention) for the TAU control condition

β_{1j} = Slope characterizing *additional* residualized gains on VABS_EL (i.e., post scores when controlling for pre-intervention socres), for average student *j* in the peer support group, relative to the average residualized gain of the TAU control group (i.e., β_{0j})

β_{2j} = Slope characterizing *additional* residualized gains on VABS_EL (i.e., post scores when controlling for pre-intervention socres), for average student *j* in the peer network group, relative to the average residualized gain of the TAU control group (i.e., β_{0j})

β_{3j} = Slope characterizing the linear association between pre-intervention VABS_EL

scores and post-intervention VABS_EL scores

r_{ij} = Level 1 residual for student *j* in school *i* (i.e., random error)

γ_{00} = Mean overall intercept for the reference condition (e.g., mean of the dependent variable for the TAU control condition)

γ_{10} = Mean residualized gain for reference condition (i.e., mean pre to post-intervention change in the TAU group)

γ_{20} = Mean residualized gain for the peer support group relative to TAU group

γ_{30} = Mean residualized gain for the peer network group relative to TAU group

PEERSUPP = Dummy code variable for treatment group associated with student *j* (e.g., peer support = 1, not a peer support = 0)

PEERNETW = Dummy code variable for treatment group associated with student *j* (e.g., peer support = 1, not a peer support = 0)

PreVASB_EL = VABS_EL scores at pre-intervention introduced as a covariate.

u_{0j} = Random intercept for school level effects (i.e., variance component of school)

This analysis was conducted to compare whether target students in the peer support and peer network groups would have an increase in expressive language skills in relation to the control group (TAU). The dependent variable (i.e., VABS Expressive Language score) examined whether high school students participating in peer support and peer network interventions demonstrated an increase in expressive language from pre-intervention to post-intervention. Data predicated no change in expressive language skills, as indicated by teacher

ratings on the Vineland, for target students in the peer support and peer network interventions (see Table 9).

Effects of treatment on expressive language skills. Student's results across all three conditions were not statistically significant, indicating that student's expressive language skills did not improve as a result of either peer support or peer network intervention, $\gamma_{10} = -1.30$, $p = .072$, $\gamma_{20} = -0.53$, $p = 0.44$ (see Table 9). Expressive language skills for the peer support and peer network conditions at pre- and post-intervention were similar to that of the TAU condition, separately (see Figure 2). Thus, there were no differences between groups on Vineland expressive language outcomes. The Vineland expressive language scores do not predict differences in the groups; however, expressive language pre-scores were significantly correlated to post-scores on the Vineland expressive language subscale.

Table 9

Multilevel Model Predicting Change in Expressive Language Skills Related to Treatment

Fixed Effect	Coefficient	Std. Error	*t*-statistic	Approx. *d.f.*	*p*-value
For INTRCPT, β_0 INTRCPT2, γ_{00}	5.62	1.72	3.26	22	0.004
For PEERSUPP slope, β_1 INTRCPT2, γ_{10}	-1.30	0.71	-1.82	120	0.072
For PEERNETW slope, β_2 INTRCPT2, γ_{20}	-0.53	0.69	-0.77	120	0.44
For VABS_ER slope, β_3 INTRCPT2, γ_{30}	0.88	0.88	23.58	120	<0.001

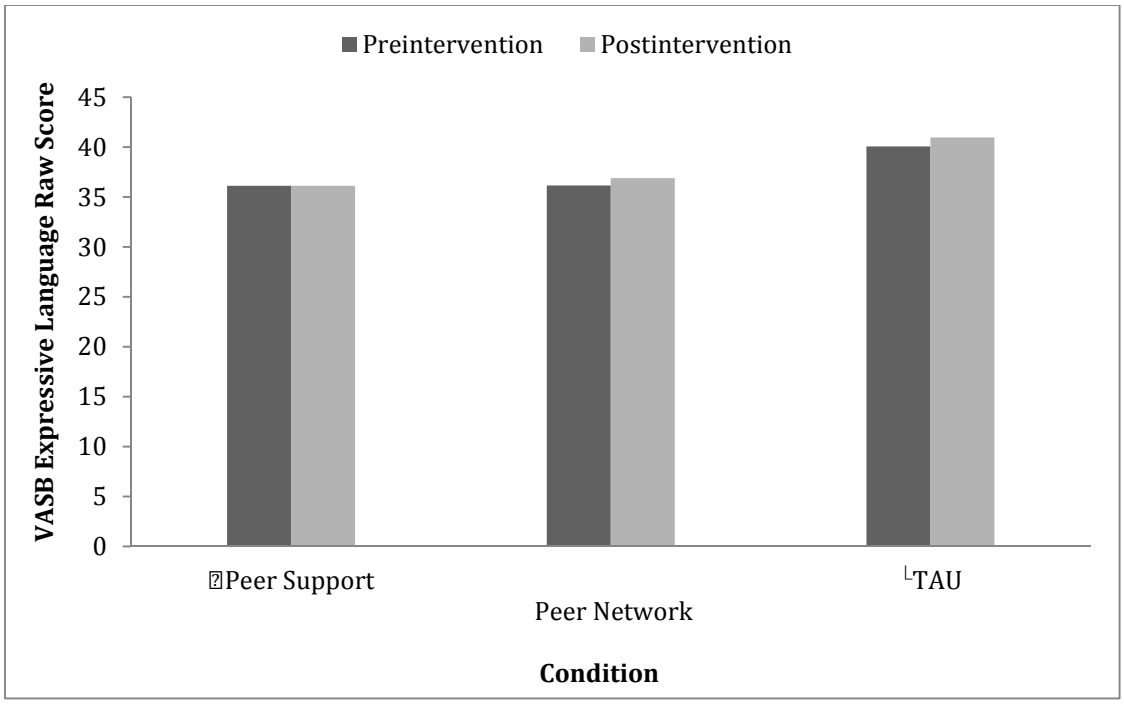

Figure 2. Expressive language scores at baseline and post-intervention.

School level effects were not found to be significant (i.e., residualized gains did not vary by school for the control group), $u_o = 0.53$, $p > 0.50$ (see Table 10).

Table 10

Expressive Language Skills Final Estimate of Variance Components

Random Effect	*SD*	Variance	*d.f.*	X^2	*p*-value
INTRCPT1, u_o	0.73	0.53	22	21.72	>0.50
level-1, r	5.44	29.59			

Random coefficients regression model for question two.

Level-1 Model

$$PostVASB\_RL = \beta_{0j} + \beta_{1j}*(PEERSUPP_{ij}) + \beta_{2j}*(PEERNETW_{ij}) + \beta_{3j}*(\text{Pre}VASB\_RL_{ij}) + r_{ij}$$

Level-2 Model

$$\beta_{0j} = \gamma_{00} + u_{oj}$$

$\beta_{1j} = \gamma_{10}$
$\beta_{2j} = \gamma_{20}$
$\beta_{3j} = \gamma_{30}$

Mixed Model
$PostVASB\_RL = \gamma_{00} + \gamma_{10}*PEERSUPP_{ij} + \gamma_{10}*PEERNETW_{ij} + \gamma_{30}* PreVASB\_RL_{ij} + u_{oj} + r_{ij}$

Where:

PostVASB_RL = Dependent variable (i.e., Post Vineland receptive language score) for student

j at *i* measurement occasion (dummy code for pre-intervention or post-intervention scores)

β_{0j} = Intercept for student *j* in the control condition (i.e., the reference group) indicating the mean of the residualized gain on VASB_RL (i.e., post scores when controlling for pre-intervention) for the TAU control condition

β_{1j} = Slope characterizing *additional* residualized gains on VASB_RL (i.e., post scores when controlling for pre-intervention scores), for average student j in the peer support group, relative to the average residualized gain of the TAU control group (i.e., β_{0j})

β_{2j} = Slope characterizing *additional* residualized gains on VASB_RL (i.e., post scores when controlling for pre-intervention scores), for average student j in the peer network group, relative to the average residualized gain fo the TAU control group (i.e., β_{0j})

β_{3j} = Slope characterizing the linear association between pre-intervention VASB_RL scores and post-intervention VASB_RL scores

r_{ij} = Level 1 residual for student *j* in school *i* (i.e., random error)

γ_{00} = Mean overall intercept for the reference condition (e.g., mean of the dependent variable for the TAU control condition)

γ_{10} = Mean residualized gain for reference condition (i.e., mean pre to

post-intervention change in the TAU group)

γ_{20} = Mean residualized gain for the peer support group relative to TAU group

γ_{30} = Mean residualized gain for the peer network group relative to TAU group

PEERSUPP = Dummy code variable for treatment group associated with student *j* (e.g., peer support = 1, not a peer support = 0)

PEERNETW = Dummy code variable for treatment group associated with student *j* (e.g., peer support = 1, not a peer support = 0)

PreVASB_RL = VASB_RL scores at pre-intervention introduced as a covariate

u_{oj} = Random subject intercept for school level effects (i.e.,variance component of school)

This second analysis was conducted to compare whether target students in the peer support and peer network groups would have an increase in receptive language skills in comparison to the control group (TAU). The dependent variable (i.e., VABS Receptive Language score) examined if receptive language skills in high school students participating in peer support and peer network interventions demonstrated an increase from pre-intervention to post-intervention. Data predicted no change in receptive language skills, as indicated by teacher ratings on the Vineland, for target students in the peer support and peer network interventions (see Table 11).

Effects of treatment on receptive language skills. Results across all three conditions (i.e., peer support, peer network, TAU) were not statistically significant, indicating that student's receptive language skills did not improve as a result of either peer support or peer network

intervention, $\gamma_{10} = 0.25$, $p = 0.59$, $\gamma_{20} = 0.62$, $p = 0.25$ (see Table 11). Receptive language skills for the peer support and peer network conditions at pre- and post-intervention were each similar to that of the TAU condition (see Figure 3). Receptive language pre-scores were significantly correlated to post-scores on the Vineland receptive language subscale.

Table 11

Multilevel Model Predicting Change in Receptive Language Skills as Related to Treatment

Fixed Effect	Coefficient	Std. Error	*t*-statistic	Approx. *d.f.*	*p*-value
For INTRCPT, β_0 INTRCPT2, γ_{00}	3.41	1.04	3.29	22	0.003
For PEERSUPP slope, β_1 INTRCPT2, γ_{10}	0.25	0.45	0.55	120	0.59
For PEERNETW slope, β_2 INTRCPT2, γ_{20}	0.62	0.53	1.16	120	0.25
For VABS_ER slope, β_3 INTRCPT2, γ_{30}	0.85	0.049	17.35	120	<0.001

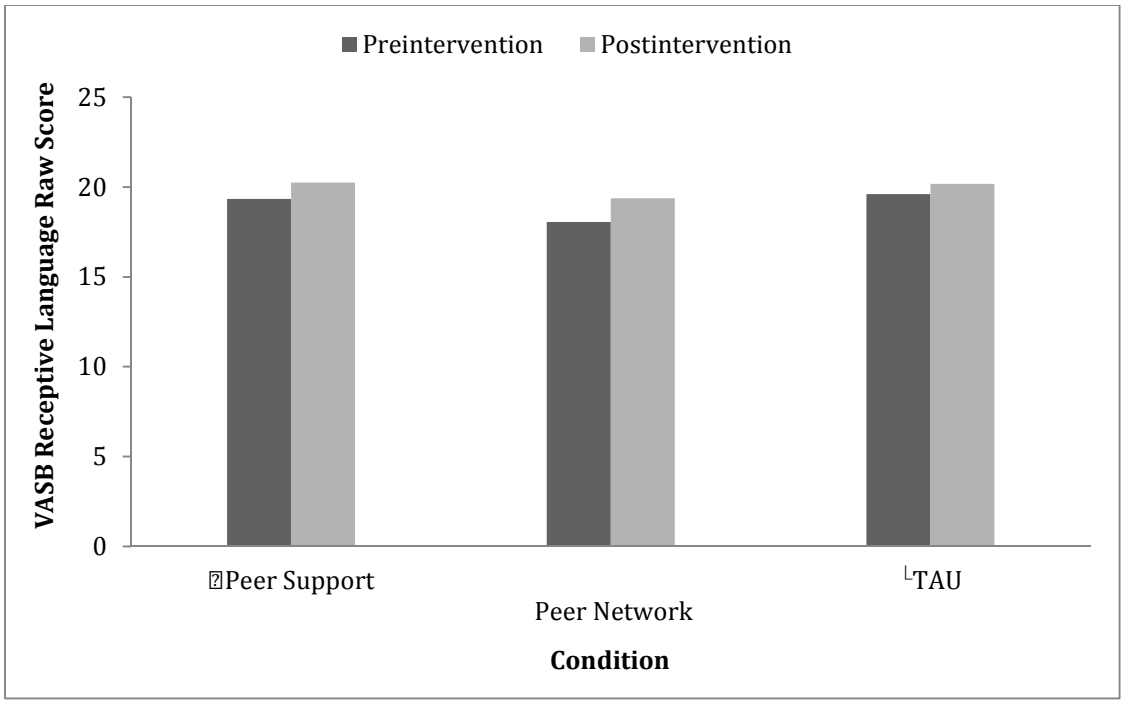

Figure 3. Receptive language scores at baseline and post-intervention.

Again, school level effects were not found to be significant (i.e., residualized gains did not vary by school for the control group) $u_o = 0.47$, p = 0.13 (see Table 12).

Table 12

Receptive Language Skills Final Estimate of Variance Components

Random Effect	*SD*	Variance	*d.f.*	X^2	*p*-value
INTRCPT1, u_o	0.69	0.47	22	29.59	0.13
level-1, *r*	3.16	9.99			

Random coefficients regression model for question three.

Level-1 Model

$PostSSIS\_SC = \beta_{0j} + \beta_{1j}*(PEERSUPP_{ij}) + \beta_{2j}*(PEERNETW_{ij}) + \beta_{3j}*(PreSSIST\_SC_{ij}) + r_{ij}$

Level-2 Model

$\beta_{0j} = \gamma_{00} + u_{oj}$

$\beta_{1j} = \gamma_{10}$

$\beta_{2j} = \gamma_{20}$

$\beta_{3j} = \gamma_{30}$

Mixed Model

$PostSSIS\_SC = \gamma_{00} + \gamma_{10}*PEERSUPP_{ij} + \gamma_{10}*PEERNETW_{ij} + \gamma_{30}* PreSSIST\_SC_{ij} + u_{oj} + r_{ij}$

Where:

PostSSIS_SC = Dependent variable (i.e., Post SSIS social communication score) measured for student *j* in *i* school

β_{0j} = Intercept for student *j* in the control condition (i.e., the reference group) indicating the mean of the residualized gain on SSIS_SC (i.e., post scores when controlling for pre-intervention) for the TAU control condition

β_{1j} = Slope characterizing *additional* residualized gains on SSIS_SC (i.e., post scores when controlling for pre-intervention scores), for average student *j* in the peer support group, relative to the average residualized gain of the TAU control group (i.e., β_{0j})

β_{2j} = Slope characterizing *additional* residualized gains on SSIS_SC (i.e., post scores when controlling for pre-intervention scores), for average student j in the peer network group, relative to the average residualized gain of the TAU control group (i.e., β_{0j})

β_{3j} = Slope characterizing the linear association between pre-intervention SSIS_SC scores and post-intervention SSIS_SC scores

r_{ij} = Level 1 residual for student *j* in school *i* (i.e., random error)

γ_{00} = Mean overall intercept for reference condition (e.g., mean of the

dependent variable for the TAU control condition)

γ_{10} = Mean residualized gain for reference condition (i.e., mean pre to post-intervention change in the TAU group)

γ_{20} = Mean residualized gain for the peer support group relative to TAU group

γ_{30} = Mean residualized gain for the peer network group relative to TAU group

PEERSUPP = Dummy code variable for treatment group associated with student *j* (e.g., peer support = 1, not a peer support = 0)

PEERNETW = Dummy code variable for treatment group associated with student *j* (e.g., peer support = 1, not a peer support = 0)

PreSSIS_SC = SSIS_SC scores at pre-intervention introduced as a covariate

u_{0j} = Random intercept for school level effects (i.e., variance component of school)

The third analysis was performed in order to compare if target students in the peer support and peer network groups would have an increase in social communication skills in comparison to the control group (TAU). The dependent variable (i.e., SSIS Social Communication score) examined whether social communication skills in high school students participating in peer support and peer network interventions would demonstrate an increase from pre-intervention to post-intervention. Again, data predicted no change in social communication skills, as indicated by teacher ratings on the SSIS, for target students in the peer support and peer network interventions (see Table 13).

Effects of treatment on social communication skills. Once again, results across all three conditions (i.e., peer support, peer network, TAU) were not statistically significant, indicating

that student's social communication skills did not improve as a result of either peer support or peer network intervention, $\gamma_{10} = 0.82$, $p = 0.094$, $\gamma_{20} = -0.65$, $p = 0.27$ (see Table 13). Social communication scores for students in the peer support and peer network conditions at pre- and post-intervention were similar to that of the TAU condition, separately (see Figure 4). Social communication pre-scores were also significantly correlated to post-scores on the SSIS social communication subscale.

Table 13

Multilevel Model Predicting Change in Social Communication Skills as Related to Treatment

Fixed Effect	Coefficient	Std. Error	*t*-statistic	Approx. *d.f.*	*p*-value
For INTRCPT, β_0 INTRCPT2, γ_{00}	2.81	0.56	5.04	22	<0.001
For PEERSUPP slope, β_1 INTRCPT2, γ_{10}	0.82	0.48	1.69	120	0.094
For PEERNETW slope, β_2 INTRCPT2, γ_{20}	-0.65	0.58	-1.12	120	0.27
For VABS_ER slope, β_3 INTRCPT2, γ_{30}	0.80	0.038	21.12	120	<0.001

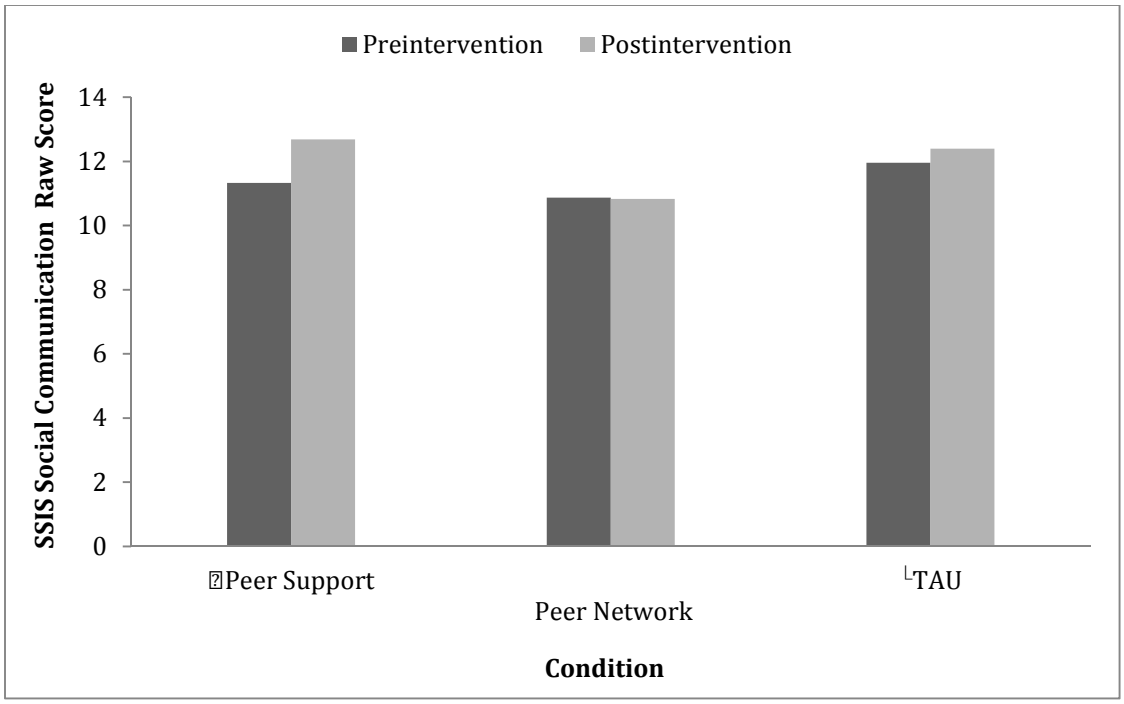

Figure 4. Social communication scores at baseline and post-intervention.

School level effects were not found to be significant, $u_o = 0.093$, p = 0.41 (see Table 14).

Table 14

Social Communication Skills Final Estimate of Variance Components

Random Effect	*SD*	Variance	*d.f.*	X^2	*p*-value
INTRCPT1, u_o	0.31	0.093	22	22.86	0.41
level-1, *r*	2.44	5.97			

Analysis of students using AAC devices. Out of the 146 students with developmental disabilities, 30 students were identified as using an AAC device, per their IEP. Out of these 30 students with AAC devices 13 were in the peer support condition, 12 in the peer network condition, and 5 in the TAU condition.

Frequency of students using their AAC system. Due to the limited number of students who were identified as having an AAC system in their IEP, descriptive statistics were used to

analyze Questions 4 and 5. Out of the 30 students who had an AAC device, no students were observed as using the AAC device in the pre-intervention observations (i.e., three observations for each target student in all conditions). During the post-observations only two students were observed using their AAC device (see Table 15). Out of these two students, one of the students was in the peer support condition (n = 13) and one was in the peer network condition (n =12). The student in the peer support condition utilized the AAC device in all three post-observation session, while the target student in the peer network condition only used the AAC device during one of the three observations. No students in the TAU condition used their AAC devices. While no students in the TAU condition used an AAC device, it is important to note that this condition had the fewest number of students requiring an AAC device (n = 5). The peer support and peer network conditions had a similar number of students with AAC systems; however, the student in the peer support condition used the device more consistently (see Table 15). Overall, based on this given data, few students requiring an AAC system, as indicated in their IEP, use them consistently at school.

Table 15

Student use of AAC Devices During Observations

	Peer Support	Peer Network	TAU
Number of students with an AAC device	13	12	5
Number of students using their AAC device	1	1	0
Number of observations a device was used	3	1	0
Percent of observations a device was used	7.69	2.78	0

Demographics for the students requiring the use of an AAC are illustrated in Table 16. More males than females were identified as requiring an AAC; however, males have twice the prevalence of having a developmental disability (CDC, 2015). The need for an AAC was comparable across grade levels. The majority of students identified as requiring an AAC were

Caucasian and did not qualify for free/reduced lunches. The only student who used their device consistently at post-observation was male, in the twelfth grade, not eligible for free/reduced-price, and had a comorbid diagnosis of autism and intellectual disability.

Table 16

Demographics of Students Identified as having an AAC

	Comparison (n = 5)	Peer Support (n = 13)	Peer Network (n = 12)
Gender[1]			
Female	2 (40.0%)	2 (15.4%)	3 (25.0%)
Male	3 (60.0%)	**11 (84.6%)**	9 (75.0%)
Grade level[1]			
Ninth	2 (40.0%)	2 (15.4%)	4 (33.3%)
Tenth	1 (20.0%)	3 (23.1%)	3 (25.0%)
Eleventh	1 (20.0%)	5 (38.5%)	3 (25.0%)
Twelfth	1 (20.0%)	**3 (23.1%)**	2 (16.7%)
Race/ethnicity[1]			
European American	3 (60.0%)	**9 (69.2%)**	10 (83.3%)
African American	1 (20.0%)	1 (7.7%)	1 (8.3%)
Asian American	0 (0.0%)	1 (7.7%)	1 (8.3%)
Native or Alaskan American	0 (0.0%)	1 (7.7%)	0 (0.0%)
Hispanic or Latino/a	0 (0.0%)	0 (0.0%)	0 (0.0%)
Other or multiple	1 (20.0%)	1 (7.7%)	0 (0.0%)
Eligibility for free/reduced-price meals[1]			
Yes	2 (40.0%)	3 (23.1%)	1 (8.3%)
No	3 (60.0%)	**10 (76.9%)**	11 (91.7)
Primary or secondary disability category[1]			
Autism	2 (40.0%)	8 (61.5%)	8 (66.7)
Intellectual disability	3 (60.0)	5 (38.5%)	3 (25.0%)
Autism and intellectual disability	0 (0.0%)	**6 (46.1%)**	0 (0.0%)
Other developmental disabilities	0 (0.0%)	0 (0.0%)	1 (8.3%)

Frequency[1] (percentage). Mean[2] (standard deviation).
Note. Demographics for the child that used their AAC during post-observation are bolded.

Effects of peer-mediate interventions for students with an AAC. Descriptive statistics were also used in order to determine whether high school students with severe developmental disabilities, that have an AAC device, and participated in peer support and peer network

interventions demonstrate improvements in peer interaction and classroom engagement. Only one student consistently utilized the AAC device consistently in the post-observations. For this student, in the peer support condition, there was a significant increase in task responses, as well as, social initiations and responses, as observed in the post-observations (see Figure 5). This data illustrates an increase in the number of social initiations and responses from the baseline phase to treatment, as indicated by the percentage of non-overlapping data (PND), which is 100% respectively for both social initiations and responses. No overlapping data occurred between phases for his social initiations or responses, as well as task responses. He had no task or social initiations or responses in the pre-intervention observations, but had significantly more peer interactions following the introduction to a peer support intervention (see Figure 5).

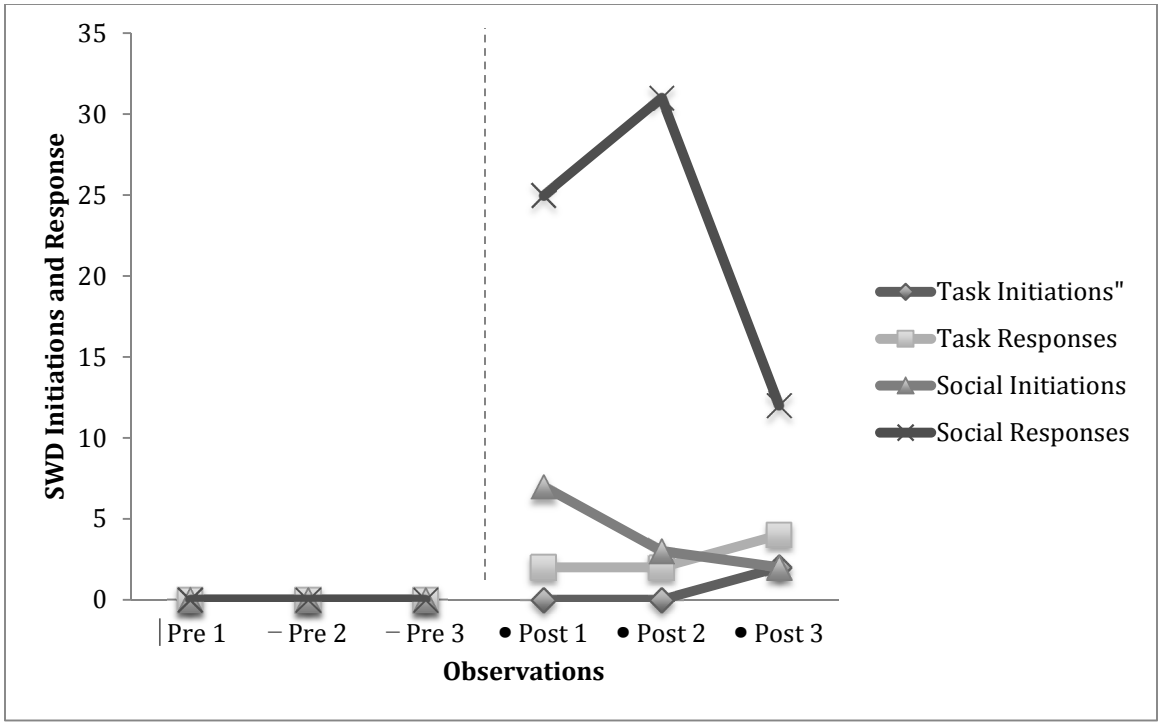

Figure 5. Frequency of task and social initiations and responses of SWD using an AAC.

When comparing the target student in the peer support condition that utilized his AAC device to the other target students in the peer support condition who did not use their device, the student that utilized his device post-intervention had significantly more overall interactions ($\overline{x}$ = 30.01) compared to the other target students that did not use their devices ($\overline{x}$ = 13.83) (see Figure 6). Additionally, the target student that used the AAC device at post-intervention had fewer interactions during baseline ($\overline{x}$ = 0) than the other target students in the peer support condition ($\overline{x}$ = 0.50). Initiations for this student, using their AAC device ($\overline{x}$ = 4.67) at post-intervention was also greater compared to the other target students in the peer support condition that did not utilize their AAC device ($\overline{x}$ = 3.03). Likewise, the target student with the AAC device had a significantly greater number of responses ($\overline{x}$ = 25.34) in comparison to the other target students in the peer support condition with an AAC device ($\overline{x}$ = 10.81).

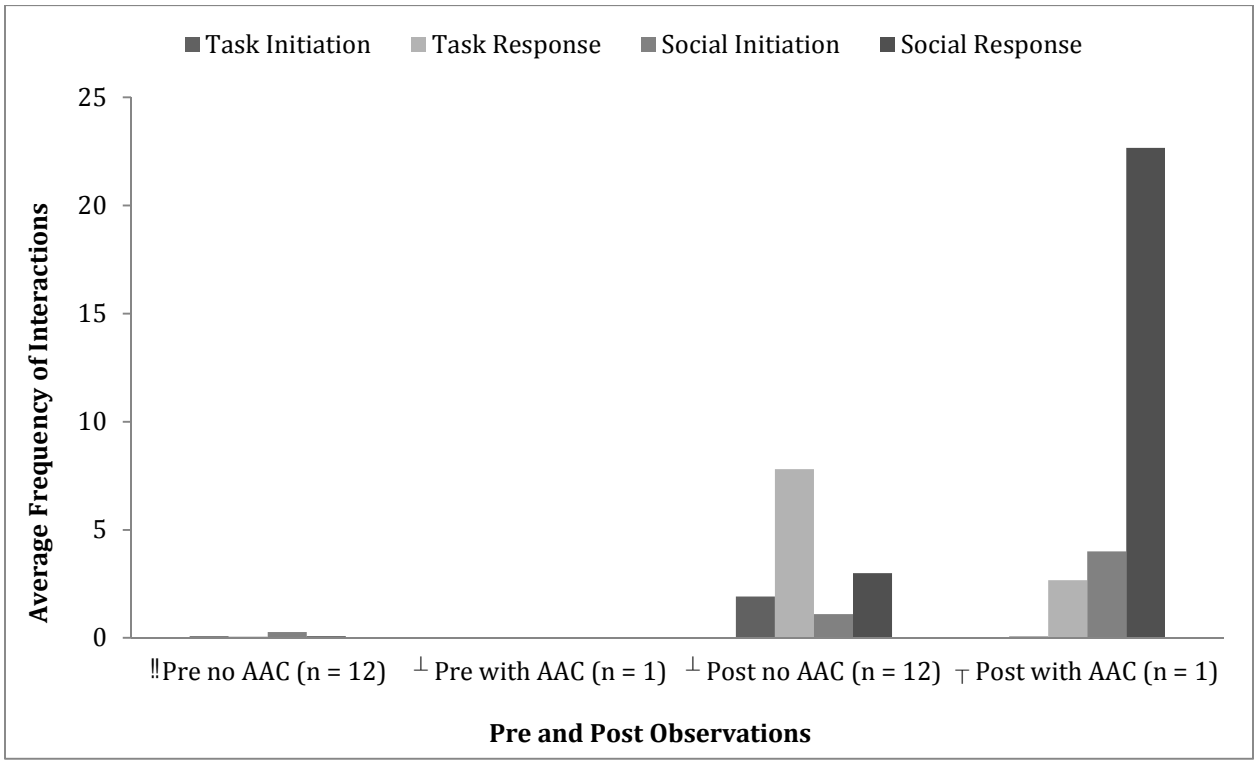

Figure 6. Mean interaction frequency of SWD in PS condition using and not utilizing their AAC.

In terms of the TAU condition, there is little difference in the frequency of interactions from pre- to post-intervention observations (see Figure 7). While the TAU had the smallest number of participants who were indicated as having an AAC device in their IEP, they had the most interactions during the baseline phase. In terms of greatest gains, individuals in the peer support condition had s significantly higher frequency of task and social initiations and responses following treatment implementation. The peer network condition also displayed an increase in the frequency of task and social interactions; however, to a lesser extent than the peer support condition. Thus, from this small sample size, it appears that peer-mediated interventions increased the number of interactions occurring between students with developmental disabilities with poor communication skills, requiring an AAC device, as indicated in their IEP, despite the lack of utilizing the device (see Figure 7).

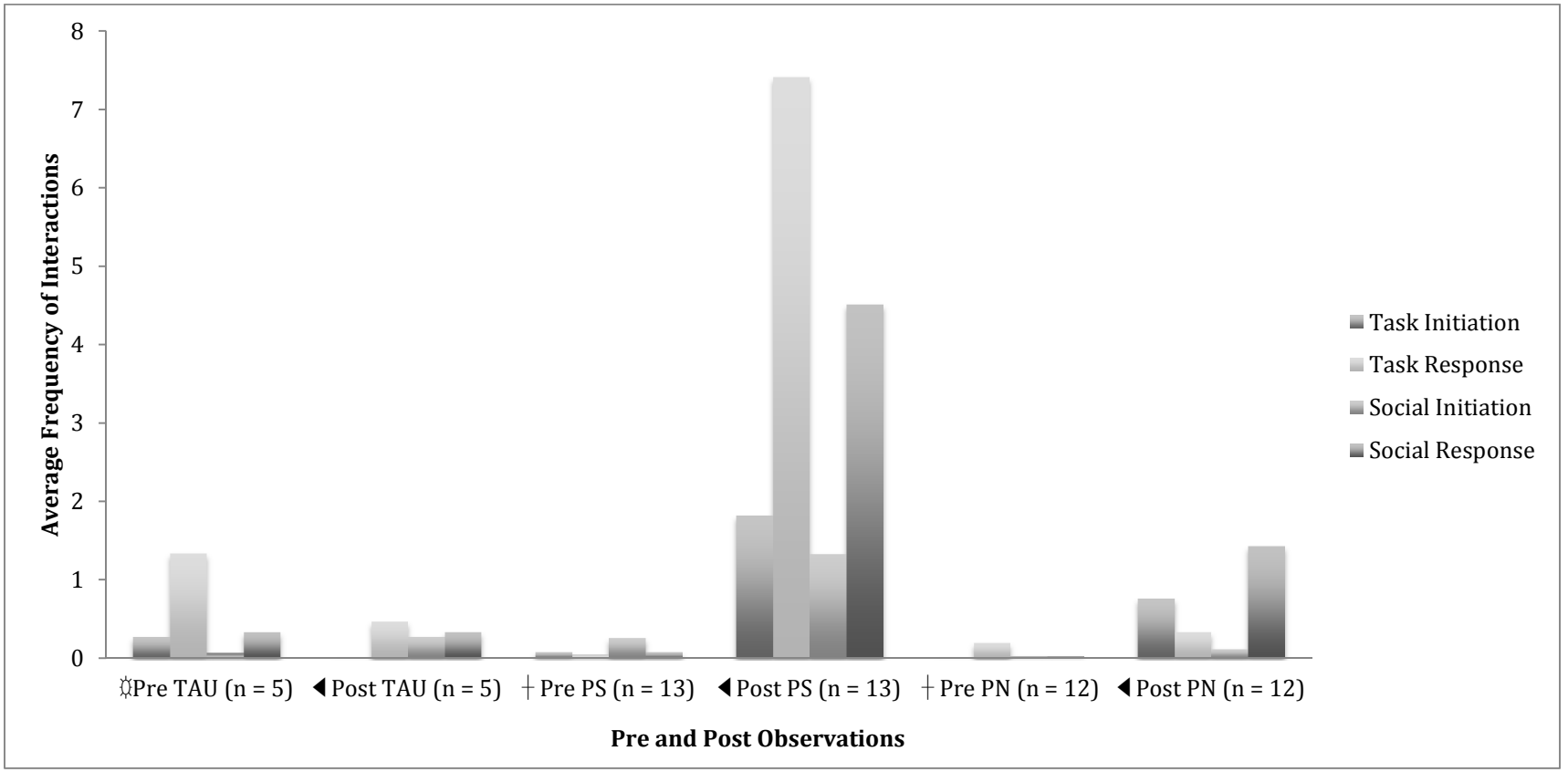

Figure 7. Mean interaction frequency of SWD in PS and PN conditions.

Peer interactions directed towards target students with an AAC. When comparing the number of interactions between general classroom peers (i.e., non-peer supports) and peer supports, towards the target student that utilized his AAC device in the post-observation phase, the number of overall peer interactions increased from baseline to post-observation (see Figure 8). During the baseline observations (i.e., three observations), there was only one task ($\bar{x}$= 0.33) and social initiation ($\bar{x}$= 0.33) observed. At post-observation there were also general peers in the target students classroom, other than the peer support, that interacted with the target student. While these peer interactions included both social initiations ($\bar{x}$ = 0.67) and responses ($\bar{x}$ = 1.33), the number of interactions directed toward the target students, by other general peers in the classroom were somewhat limited. Peer supports, on the other hand, were observed having multiple interactions with the target student following treatment (see Figure 8).

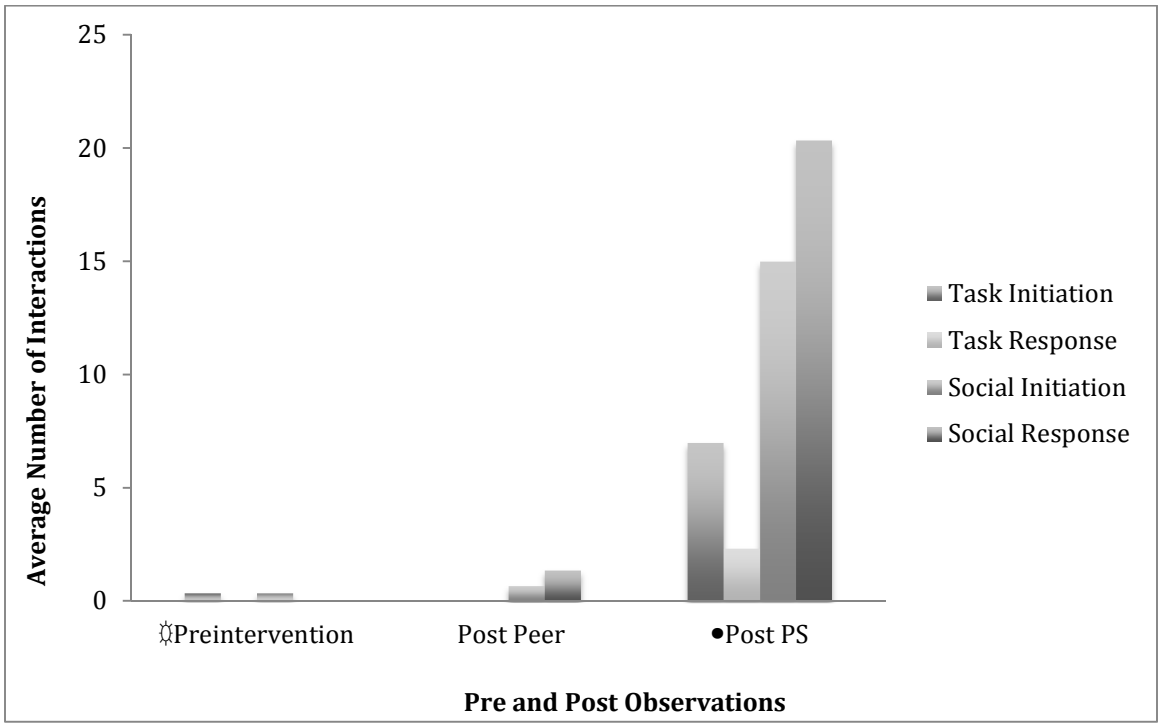

Figure 8. Frequency of task and social initiations and responses of peers and PS towards a SWD using an AAC.

In assessing the frequency of interactions towards students with disabilities (SWD) that required the use of an AAC device, according to their IEP, at pre- and post-observation across conditions, students in the peer mediated conditions (i.e., peer support and peer network) had significantly more peer interactions following treatment implementation (see Figure 9). The frequency of peer interactions in the TAU condition actually decreased from baseline ($\overline{x} = 4.47$) to post-observation ($\overline{x} = 2.60$), while the interactions between overall peers in the classroom for both the peer support and peer network conditions increased from baseline to post-observation. The peer supports, in the peer support condition, had significantly more interactions with the target students than the target student had with the general peers in their classroom (see Figure 9). Overall, both treatment conditions were effective in increasing the number of interactions that took place between peers and the target students, despite the lack of utilization of their AAC.

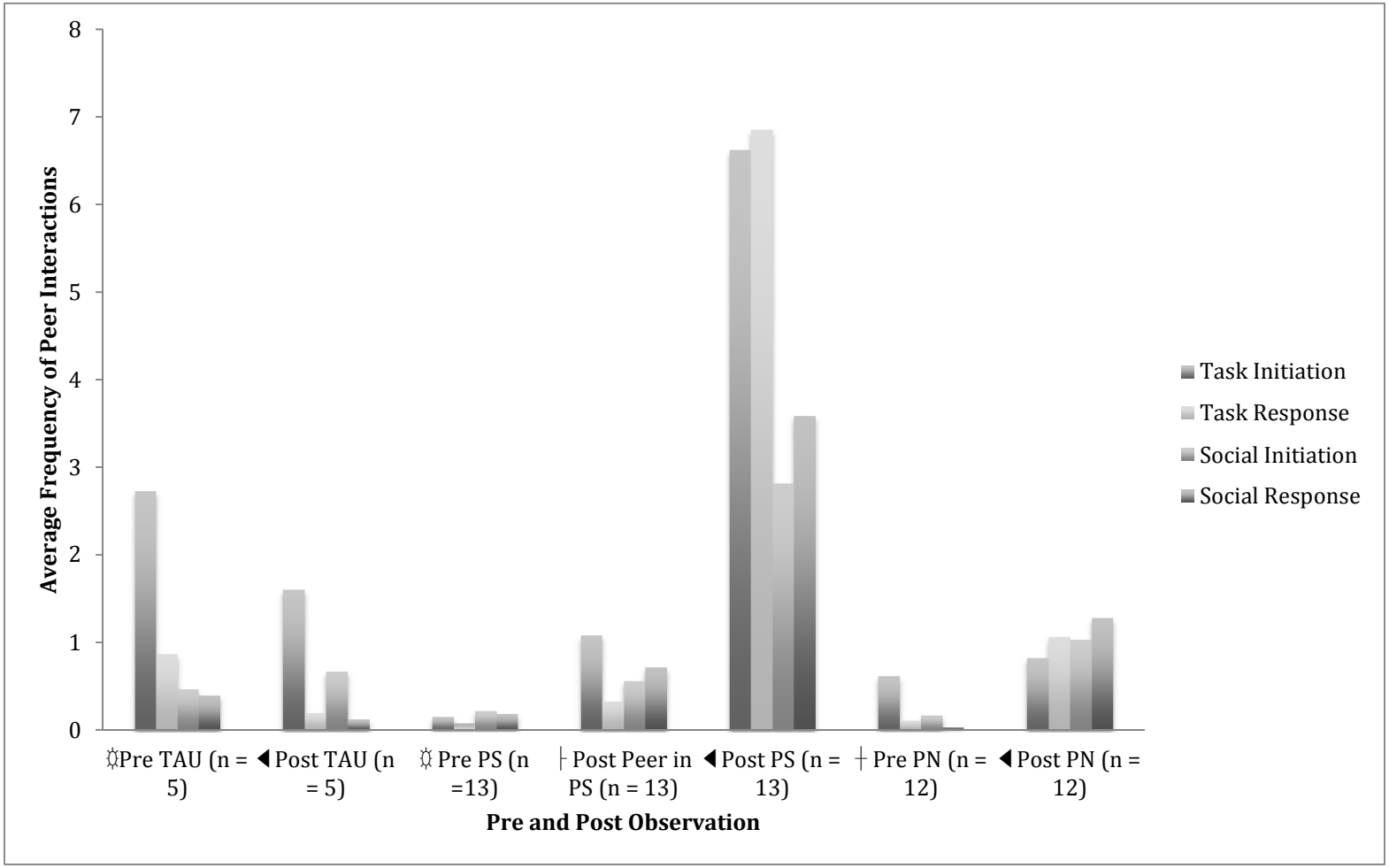

Figure 9. Frequency of task and social initiations and responses of peers and PS toward the target student.

Number of peers interacting with target students requiring an AAC. In the TAU condition, target students were observed interacting with more students during baseline ($\overline{x}$ = 0.73) than at post-observation ($\overline{x}$ = 0.73) (see Table 17). In both the peer-mediated conditions there was an increase in the number of peers the target student interacted with; however, this increase was significantly higher when accounting for the interactions with the peer supports, in the peer support condition. Surprisingly, the student that utilized his AAC device in the peer support condition, during post-observations, interacted with significantly more peers compared to the targets students in the peer support condition that did not utilize their AAC (see Figure 10).

Table 17

Number of Different Peers Interacted with During Class Observations

	Number of peers interacted with	
Condition	$\overline{x}$	*SD*
TAU at preobservation (*n* = 5)	0.73	0.88
TAU at postobservation (*n* = 5)	0.67	0.90
Peer support using AAC at preobservation (*n* = 1) Excluding peer supports	0.33	0.58
Peer support using AAC at postobservation (*n* = 1) Exluding peer supports	2.00	1.73
Peer support using AAC at postobservation (*n* = 1) Including peer supports	4.00	1.73
Total peer supports at preobservation (*n* = 13) Excluding peer supports	0.44	0.97
Total peer supports at postobservation (*n* = 13) Excluding peer supports	0.69	1.03
Total peer supports at postobservation (*n* = 13) Including peer supports	2.03	1.50
Peer network at preobservation (*n* = 12)	0.44	1.08
Peer network at preobservation (*n* = 12)	1.15	3.57

Note. The means and standard deviations represent the variation in means of all participants from all three observations (i.e., three at baseline or three at post-observation).

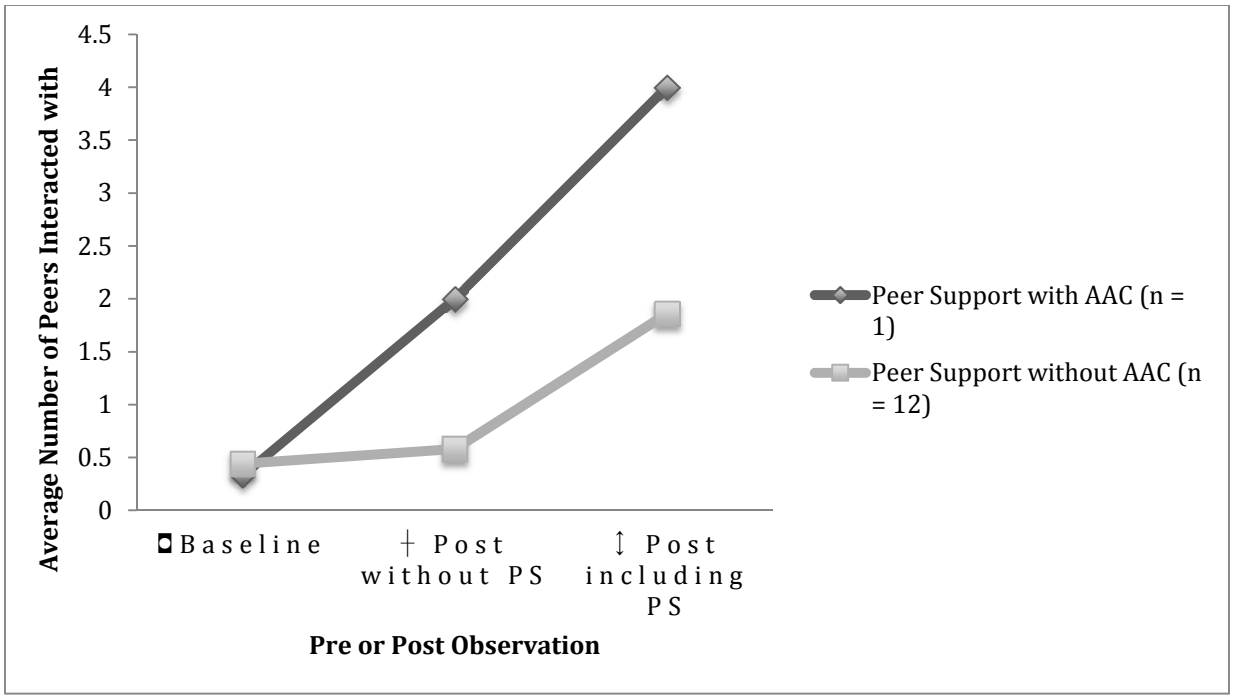

Figure 10. Number of peers interacted that interacted with target students with and without AAC.

Classroom engagement. Classroom engagement was collected during the three baseline and three post-intervention observations, utilizing the Lilly Data Collector on the Dell Inspiron Duo. Duration recording was used in order to obtain an accurate amount of time that target students were engaged in consistent instructional activities. When the target student was actively involved in or attending to instructional activities and materials that were identical or similar to the content provided to the majority of the class the *engaged with consistent instructional activities* code was used. In addition, this code was used when the target student was completing coursework that was modified, but consistent with the general education curriculum. This code remained the same unless there was a necessary reason to change.

Results for the TAU condition illustrated a slight decrease in engagement from baseline to post-observation (see Table 18). Target students in the peer network condition also displayed a slight decrease in engagement in consistent instructional activities from baseline to post-

intervention; however, target students who participated in the peer support condition displayed a significant increase in time engaged in consistent instructional activities (see Table 18).

Table 18

Percentage of Time Engaged in Consistent Instructional Activities

	Time Engaged	
Condition	Percentage	*SD*
TAU at preobservation (*n* = 5)	46.74	36.45
TAU at postobservation (*n* = 5)	41.02	39.93
Total peer supports at preobservation (*n* = 13)	47.76	31.28
Total peer supports at postobservation (*n* = 13)	61.62	30.28
Peer network at preobservation (*n* = 12)	33.43	30.61
Peer network at postobservation (*n* = 12)	31.60	30.21

When comparing the peer that utilized his AAC in the peer support condition during post-observations to the other peers in the peer support group that did not use their AAC devices, the peer that utilized the AAC at post-intervention had significantly more time engaged in consistent activities (see Figure 11). While engagement in consistent activities increased for all students in the peer support condition, this increase was much greater for the student that used their AAC device. Moreover, the student that did not use their AAC at baseline was less engaged in consistent activities compared to the other 12 target students within the peer support condition (see Figure 11).

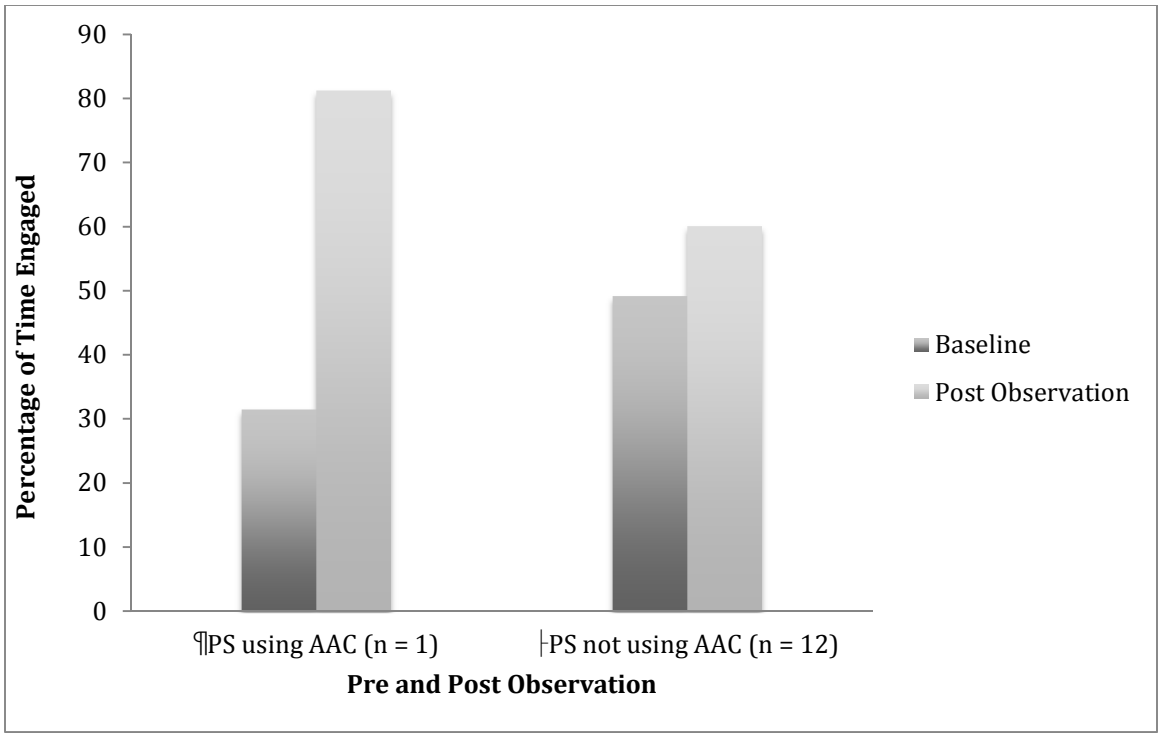

Figure 11: Percentage of time engaged in consistent activities for SWD in PS condition using and not utilizing their AAC.

Chapter 5: Discussion

Overview

The benefits of inclusion are numerous for both students with and without disabilities (Hunt, Alwell, Farron-Davis, &Goetz, 1996; Peltier, 1997; Salend & Duhaney, 1999). It is also a key component in safeguarding the right to equal learning opportunities. Inclusion is not only aligned with federal initiatives, such as, *No Child Left Behind Act* (2001) and the *Individuals with Disabilities Education Act* (2004), but also has empirical support, highlighting the benefits for students with and without disabilities (see Hunt, Alwell, Farron-Davis, &Goetz, 1996; Peltier, 1997; Salend & Duhaney, 1999).

Historically, the paraprofessional model has been used as a means of promoting inclusion; yet, it is not without its downfalls. Research illustrates that the overreliance on paraprofessionals may cause a variety of harmful effects, including separation from peers, stigmatization, decreased academic engagement and self-esteem, lack of autonomy, and increased challenging behaviors (see Broer, Doyle, & Giangreco, 2005; Downing, Ryndak, & Clark, 2000; Giangreco, Broer, & Edelman, 2001, 2002; Giangreco & Doyle, 2007; Giangreco, Edelman, Luiselli, & MacFarland, 1997; Marks, Shrader, & Levine, 1999; Tews & Lupart, 2008). Peer-mediated interventions, such as peer support and peer network interventions have demonstrated great potential, as a viable way of increasing inclusive opportunities for students with disabilities and may help to decrease problems associated with the traditional paraprofessional model. Furthermore, peer support and peer mediated interventions have displayed both social and academic gains for students with disabilities (see Carter et al., 2007; Owen-DeSchryver et al., 2008).

While previous studies have investigated the impact of peer-mediated programs on elementary-aged students, illustrating an improvement in communication skills, no study to-date has investigated whether high school students garner these same benefits. Additionally, there are few studies investigating the benefits of peer-mediated interventions for students that require an AAC device. A small number of case studies have illustrated the benefits of peer-mediated interventions for elementary-aged children taught to use an AAC; yet, no studies have investigated whether high school students that have an AAC receive similar benefits from participating in a peer-mediated intervention. Also, previous studies have indicated that few students with AAC devices actually use these systems within a classroom (see Chung, Carter, & Sisco, 2012). It is unclear as to whether students with an AAC would display the same social and academic gains. Further investigation is needed in order to better understand the full benefits of peer-mediated interventions within the high school setting, as the push for inclusion is becoming stronger.

The purpose of the present study is to expand the peer-mediated literature. First, by investigating whether high school students, participating in peer-mediated interventions, display similar communicative gains as elementary school children. Secondly, by examining the impact of peer-mediated interventions for high school students, with disabilities, whom utilize an AAC device. Thirdly, by investigating whether students that have an AAC, as indicated in their IEP, actually use it in the classroom, or if they are more likely to use the device during a peer-mediated intervention. Lastly, the purpose of this study is to determine whether these students, requiring an AAC system, benefit from a peer support or peer network intervention if the system is not used, and if students that use the AAC device display more gains than students that do not use the device. It is important to understand the all the potential benefits of peer-mediated

interventions for high school students, and to determine whether this type of intervention would be effective for students with poor communication skills, requiring an alternative way to communicate effectively.

Analysis of Treatment Integrity

Treatment integrity is of paramount importance when conducting research and investigating treatment effects. In order to verify that a treatment is being implemented with integrity, it is essential to systematically evaluate each of the intervention components. If this were not done, it would be unclear as to what parts of the intervention were implemented as designed. Furthermore, it could interfere with replication of the treatment, which may impact treatment outcomes. Evaluating treatment integrity allows researchers to examine the internal and external validity and discover issues with intervention implementation, which can then be adjusted as needed (Durlak & DuPre, 2008). The P3 Fidelity Checklists provide quantitative data that characterized the critical components of the peer support and peer network models. In the present study, multiple assessors (i.e., intervention facilitators, specialists, observers) completed fidelity checklists. The P3 study utilized both self-report and direct observation methods in order to verify that the interventions were being implemented as intended.

Overall, facilitators indicated higher levels of integrity in comparison to intervention specialists and observers. It is unclear as to whether these differences in reported integrity are due to adaptations, drift, or other factors (e.g., when and how often interventionists and observers assessed behaviors related to treatment integrity), but these findings are consistent with prior studies. Noell (2005) found that teachers overestimated integrity levels when rating themselves on a weekly basis. Despite this, integrity levels in the P3 study never fell below 80.0% on any variable, providing clear evidence that the both the peer support and peer network interventions

were implemented as intended. Thus, even though there were differences across individuals completing integrity checks, high levels of treatment integrity were indicated by reporters for both peer supports and peer networks. Therefore, these results, combined with the meticulous design of the study, allow us to interpret the outcomes from the P3 study with confidence.

Interpretation of Results

As previously noted, this study sought to investigate whether high school students, participating in peer-mediated interventions, display similar communicative gains as elementary school children. Secondly, by examining the impact of peer-mediated interventions for high school students, with disabilities, whom utilize an AAC device. The final purpose of this study is to (a) investigate whether students that have an AAC, as indicated in their IEP, use the system in the classroom, (b) if they are more likely to use the device during a peer-mediated intervention, (c) if they benefit from a peer support or peer network intervention if the system is not used, and (d) if students that use the AAC device display more gains than students that do not use the device. It is critical to understand all the potential benefits of peer-mediated interventions for high school students in order to determine whether this type of intervention would be effective for students who require an AAC system.

Statistical analysis for Question One. Question 1 investigated whether high school students with severe developmental disabilities, who participate in peer support and peer network□interventions, display improvements in expressive language skills, as measured by the pre- and post-intervention teacher Vineland-II Expressive Language Subdomain. In order to answer this question, peer support data were compared to TAU and peer network data. In addition, TAU data was compared to peer network data. Initial expressive language skills were treated as a covariate, in order to control for initial communication skills as this may impact

treatment success. Results from this analysis were not statistically significant, indicating that the expressive language skills of individuals participating in peer support and peer network interventions were not significantly increased (see table 9). Thus, these peer-mediated interventions did not help to improve expressive language skills for high school students with developmental disabilities.

Statistical analysis for Question Two. Question 2 evaluated whether high school students, with developmental disabilities, participating in peer support and peer network interventions displayed improvements in receptive language skills, as measured by the pre- and post-intervention teacher Vineland-II Receptive Language Subdomain. Like, Question 1, this question was answered by comparing peer support data to TAU and peer network data. Initial receptive language skills were treated as a covariate. Results from this analysis were also not statistically significant, indicating that the receptive language skills were not significantly increased following the implementation of peer support and peer network interventions (see table 11).

Statistical analysis for Question Three. Question 3, was similarly to Questions 1 and 2, investigating whether high school students with severe developmental disabilities, participating in peer support and peer network interventions, demonstrated improvements in social communication skills compared to the control group, as measured by the pre- and post-intervention teacher SSIS Communication Subscale. This question was also answered by comparing peer support data to TAU and peer network data. Again, initial social communication skills were treated as a covariate. Like the prior questions, these results were also not statistically significant, indicating that the social communication skills were not significantly

increased following the implementation of peer support and peer network interventions (see table 13).

Descriptive analysis for Question Four. Question 4 analyzed whether high school students' participating in peer support and network interventions, as well as students in the control group, who have (as indicated in the students' IEP) an AAC (augmentative and alternative communication) system, use the AAC within the classroom as recorded during observations at baseline and post-intervention, and whether there are there differences in usage of the AAC device between the students in the peer support and peer network treatment groups versus the control group.

Out of the 146 students with developmental disabilities included in this study, 30 students were identified as requiring an AAC system, as indicated by their IEP. Out of these 30 students with AAC devices 13 were in the peer support condition, 12 in the peer network condition, and 5 in the TAU condition. Sadly, out of the 30 students who had an AAC device, no students were observed using their AAC system during the baseline phase. During the post-observations only two students were observed using their AAC device, one student in the peer support condition and one in the peer network condition. The student in the peer support condition utilized the AAC device in all three post-observation session, while the target student in the peer network condition only used the AAC device during one of the three observations. No students in the TAU condition were every observed using their AAC systems. Therefore, overall usage of AAC systems was poor.

Based on this, it is difficult to make any strong conclusions about whether being in a particular condition impacted the likelihood of using AAC systems, as only two students used their devices during post-observation. The student in the peer support condition utilized there

device most often (at each of the three post-observations), while the one student in the peer network condition used there device one time at post-observation, and none of the students in the TAU condition used their systems. Further research should be done in order to investigate AAC usage across conditions.

Descriptive analysis for Question Five. Question 5, assessed whether high school students with developmental disabilities, requiring AAC devices (as indicated in the student's IEP), and participating in peer support and peer network interventions demonstrate improvements in peer interactions and classroom engagement in comparison to students with AAC devices in the control group, as measured by pre- and post-observational data. Descriptive statistics were used to answer this question, due to the small number of students that had AAC devices (n =30), as indicated by their IEP.

Overall improvement in peer interactions. Descriptively, both students participating in the peer support and peer network condition demonstrated an increase in the number of interactions with between the target students towards their classroom peers. Yet, the increase for the peer network group was relatively small compared to the peer support group (see Figure 7). Additionally, the individuals participating in the peer support group displayed increases across task responses as well as social initiations and responses; however, the peer network group only demonstrated an increase in task initiation and social response.

When comparing the number of peer interactions directed toward the target students, who were indicated as having an AAC according to their IEP, there was a slight increase in the number of interactions between general peers in the classroom toward the target students in both the peer support and peer networks groups; however, there was a significant increase in the number of interactions directed toward target students by the peer support students. Thus,

demonstrating that the peer support intervention was effective in increasing the number of interactions between target students and their classroom peers more so than the peer network intervention.

In terms of the number of peers targets students interacted with pre- and post-observation, there was no change in the number of peers target students in the TAU group interacted with at baseline ($\overline{x}$ = 0.73, *SD* =0.88) to post-observation ($\overline{x}$ = 0.73, *SD* =0.90) (see Table 17). There was also not a substantial increase in the number of general peers who interacted with the target students in the peer support group from baseline ($\overline{x}$ = 0.44, *SD* = 0.97) to post-observation ($\overline{x}$ = 0.69, *SD* = 1.03). There was, however, an increase for students in the peer support condition in the number of peers they interacted with, including the peer support students, from baseline ($\overline{x}$ = 2.03, *SD* = 1.50). There was also a slight increase for the number of peers the students in the peer network condition interacted with from baseline ($\overline{x}$ = 0.44, *SD* = 1.08) to post-observation ($\overline{x}$ = 1.5, *SD* = 3.57). This indicates that both peer-mediated interventions were effective in increasing the number of peers the target students interacted with in the inclusive classroom environment. While this increase was only slight it, it did double the number of individuals the students were interacting with in class (see Table 17).

Interactive gains for students utilizing an AAC. Despite not using the AAC systems, both peer support and peer network students displayed gains the number of peer interactions (see Figure 7). While all students of the target students appeared to still benefit from the peer-mediated interventions, the target student that utilized their AAC system in the peer support condition had significantly more overall interactions compared to the other students in the peer support condition that did not utilize their AAC systems (see Figure 6). At baseline, the target student that used their AAC device had fewer interactions ($\overline{x}$ = 0) than the other target students in

the peer support condition ($\overline{x}$ = 0.50). Yet at post-observation, the student that utilized their AAC device had significantly more overall interactions ($\overline{x}$ = 30.01) than the other target students that did not use their devices ($\overline{x}$ = 13.83) (see figure 6). Additionally, the total number of initiations for the student using their AAC device was greater at post-observation ($\overline{x}$ = 4.67) compared to the other target students in the peer support condition that did not utilize their AAC device ($\overline{x}$ = 3.03). The target student with the AAC device also had a significantly greater number of responses ($\overline{x}$ = 25.34) in comparison to the other target students in the peer support condition with an AAC system ($\overline{x}$ = 10.81). Thus, the target student that utilized their AAC system at post-observation had significantly more interactions than the target students who did not utilize their devices.

Improvements in classroom engagement. When comparing levels of academic engagement, there was a slight decrease in the percentage of time engaged in academics for target students in the TAU condition from baseline (46.74%) to post-observation (41.02%) (see Table 17). Furthermore, there was no change in the percentage of academic engagement for target students in the peer network condition from baseline (33.43%) to post-observation (31.60%). There was, however, an increase in the percentage of time engaged in academics for target students in the peer support condition, increasing from 47.76% to 61.62%. Therefore, the peer support intervention appeared to increase the amount of time target students were engaged in academics, while the peer network condition had no impact on classroom engagement.

Gains in academic engagement for students utilizing an AAC. As previously noted, all students in the peer support group displayed gains in academic engagement compared to the TAU condition (see Figure 11). Additionally, when comparing the student who consistently utilized the AAC system at post-observation to the other target students in the peer support

condition who did not utilize their AAC systems, the student that used their AAC system displayed greater gains in the percent of time engaged in academics from pre-observation (31.46%) to post-observation (81.21%). Whereas, the target students in the peer support condition, that did not utilize their AAC systems, academic engagement increased from 49.12% at baseline to 59.98% at post-observation (see Table 17). Thus, the student, which used the AAC system, demonstrated significantly greater gains in academic engagement as compared to the other peer supports that did not utilize their AAC devices at post-observation.

Implications for Practice

There are several implications for practice, based off the present study. First, there is not yet sufficient evidence to support that high school students with developmental disabilities receive the same communicative benefits as younger individuals (i.e., between the ages of 3 through 14) (see National Autism Center, 2009; Neitzel, 2008; Owen-DeSchryver, Carr, Cale, & Blakeley-Smith, 2008). Results from this study did not indicate any expressive, receptive, or social communication gains for high school students participating in peer support or peer network interventions, as indicated by the expressive and receptive language subscales on the Vineland and social communication subscale on the SSIS.

While high school students with disabilities may not demonstrate communicative gains, this study did suggest that high school students with poor communication skills, requiring the use of an AAC system (as indicated by their IEP), benefit from peer support and peer network interventions, despite the failure to utilize their devices. Target students in the peer support intervention displayed gains in task and social interactions with peers. Peer networks also displayed an increase the frequency of interactions with peers, but to a lesser extent. Target students in the peer support intervention also displayed an increase in academic engagement.

Students in the peer network intervention did not demonstrate gains in academic engagement.

Additionally, this study clearly demonstrates the poor implementation of IEPs. Thirty students in the present study were indicated as having a need for an AAC system, as indicated by their IEP. Sadly, none of the students in the study were actually using their AAC system during baseline. Only one student implemented their AAC system, as observed during post-observation. Therefore, the implementation of a peer-mediated intervention alone does not appear to motivated students enough to use their AAC systems within a classroom setting. This finding is consistent with previous research, demonstrating that students infrequently used their assigned AAC device in the classroom (see Chung, Carter, & Sisco, 2012). The failure to implement the IEP correctly is also concerning, as IEPs outline goals, accommodations, modifications, and other materials, supports or services a child needs in order to be successful at school. The failure to ensure the AAC systems are being used indicates that these children are not receiving the full services necessary in order to promote academic success.

The fact that few students utilize their AAC systems is especially problematic since the student in the peer support intervention, that used their AAC system consistently at post-observation, displayed significantly greater gains compared to the other target students in the peer support condition that failed to use their AAC systems. Specifically, the individual that used their device had more interactions with peers and interacted with more peers. Moreover, this student was engaged in academic work for a significantly longer percentage of time, compared to the other students who did not use their AAC systems. While it is difficult to draw strong conclusions based off of one individual, it suggests a need for further research and the importance of encouraging students to use their AAC systems. This study suggests that the students not utilizing their AAC systems may be failing to live up to their full academic

potential.

Overall, the results from this study have important implications for understanding the nature of peer-mediated interventions and designing educational programs for high school students with developmental disabilities. The aforementioned findings support the use of peer support interventions within the school setting, as an alternative to the traditional paraprofessional model. This may bolster the use of inclusion in schools that may not have the financial means to have multiple paraprofessionals. Paraprofessionals in this study were trained to facilitate the peer-mediated interventions, by monitoring peers as they supported the target students. This allows paraprofessionals to support more individuals and assist the teacher in various ways, while also decreasing student reliance on the paraprofessional.

Limitations and Future Direction

There are several limitations to this study, which suggest areas of future research. First, although peer support and peer network interventions share several fundamental principles, such as using a peer as a primary agent of change in encouraging social interactions and academic engagement for students with developmental disabilities, there are intrinsic differences in treatment goals and how these two interventions are implemented. For instance, the peer support intervention was implemented within the target student's classroom, with the goal of promoting cooperative learning. The peer network intervention took place outside of an academic classroom and emphasized fostering friendships and increasing social contacts outside of the classroom. Yet, even with these critical differences, the dependent variables in the present study were restricted to only the classroom setting. No information was obtained from the locations where the peer network interventions were implemented. The findings from this study illustrate that many of the gains target students achieved in the peer support intervention were due to the

peer supports being in the academic setting where observational data was obtained. Therefore, it is unclear as to whether target students in the peer network intervention actually experienced other benefits from the intervention that were simply not captured in this study. Further research should examine the effects of a peer network intervention in a way that captures changes in socialization between students during the implementation of the peer network outside of the classroom.

Secondly, post-intervention observational data was only collected during the semester that the peer-mediated interventions were implemented. Thus, it is unclear whether students would obtain additional benefits if the intervention were implemented over multiple semesters. The timeframe used in this study (i.e., one semester) may be too short in order to maximize full benefits. Students in the peer support intervention may experience further gains with new peer supports across several semesters. Future research should investigate the implementation of peer support interventions across multiple semesters in order to investigate outcomes overtime, and whether benefits are maintained.

Thirdly, the rating scales (i.e., VASB and SSIS) used to determine gains in expressive, receptive, and social communication skills may not have been powerful enough to illustrate changes in communication skills. The frequency of words spoken, or quality of verbal language may have been a better indicator of communicative gains. Additionally, teachers may not have been able to observe changes in communication. Individual aides may have been better at noting gains in communication, as they are with the students for a larger portion of the day and can focus on a smaller number of children within the classroom. Therefore, further research is necessary in order to determine whether high school children with disabilities receive any communicative gains after participating in a peer-mediated intervention. It is possible that high

school students with disabilities have already reached their maximum communication potential, as most have had years of speech/language therapy. Therefore, high school students may not obtain communicative gains, as a result of a peer-mediated intervention, as younger children who may not have yet reached their full verbal ability.

The fourth limitation of this study was the fact that there were few individuals who reportedly had an AAC system, as indicated by their IEP. Thus, only descriptive statistics could be used. These findings are similar to those found by Hiroshi and Heejung (2010), which demonstrated low rates of AAC usage in schools in Japan. Usage was lower in the high schools, as compared to the elementary schools. No research to-date has investigated the usage of AAC systems in high schools in the United States. Additional research should also investigate whether use of AAC devices vary in accordance to the type of device. Hiroshi and Heejung (2010) found that voice output systems were used less frequently than simple picture cards. It is unclear whether training educators and paraprofessionals on more or less complex systems would increase use of AAC systems within the school environment.

Further research is also needed to assess the full benefits of peer-mediated interventions for children requiring AAC systems. In addition, there was only one student who utilized their AAC system consistently throughout the intervention. Consequently, it is difficult to make any strong conclusions based off this information. It does, however, demonstrate a critical need for further research. Especially, since the target student that used their AAC system maintained significantly greater benefits, both socially and academically, when compared to target students in the peer support group that did not utilize their AAC system. If these results are replicated in additional studies, this may help to push parents and educator to ensure that their children are using their AAC systems within the classroom.

As only one student in the peer support condition used their AAC system at post-observation, it is difficult to conclude that the additional benefits obtained, in comparison to the other target students in the peer support condition, were from the use of the AAC device and not simply because of the peer support intervention. In order to separate the benefits from the peer support intervention and the use of an AAC system, a multiple baseline design would be require, where baseline data would be obtained without the use of the peer support intervention or AAC device, followed by the implementation of a peer support intervention and then the simultaneous use of the peer support intervention with the AAC device. Future studies should address this in order to determine the full benefits of using an AAC system along with a peer support intervention.

The fact that students failed to utilize their AAC systems, despite having the need for using these devices, as indicated by their IEP, is very troubling. This suggests that the IEP is not being implemented with integrity or fidelity. If this component of the IEP is not being implemented, it leaves to question whether other components are being implemented as well. Future research should investigate whether school staff members are implementing student IEPs with integrity and fidelity. If there is a failure to implement IEP's as written, students may not be receiving the necessary services, which in turn may hamper or impede academic and social gains that may have otherwise been achieved had the IEP been implemented correctly. Future research should assess paraprofessional, special, and general educators' knowledge about their students' AAC devices, level of training on the system, and the benefits and limitations of using these devices within the classroom setting. Paraprofessional and educators' views and attitudes may influence students' AAC usage at school. Bailey, Stoner, Parette, & Angell (2006) interviewed a team of six special education teachers and one speech-language pathologist to

examine the perceptions of educational staff regarding the management and use of AAC systems at the middle and high school level. Several themes emerged during the interview, including, student communication competence, barriers of AAC use, and instructional benefits. The interviewees believed that a gain in communicative competence was shown through students' functional communication exchanges with multiple peers when using their AAC devices. The majority of team members felt that communicative competence with an AAC, begins by displaying ownership (e.g., changing messages on the device) of the device, noting that this increased AAC users' interest in using their AAC with a greater number of peers. Staff also felt that AAC competence was bolstered when students became independent in the physical care of their devices. Lastly, interviewees noted the importance of AAC users initiating communication exchanges, as a key component in obtaining communicative competence (Bailey et al., 2006).

Staff also reported instructional benefits to AAC use (Bailey et al., 2006). Instructional benefits included, more effective teaching, due to an increase in communicative competence. Teachers reported that the AAC devices provide a means of assessing academic skills. Barriers to AAC use were also highlighted, including time constraints that impact the ability to collaborate with other school personnel and restrictions of the devices, for example, device portability, durability, and training opportunities. However, a limitation of this study by Bailey and colleagues (2006) was that it did not assess whether staff viewed use of the device as positive or negative. Future studies should address whether staff views impact AAC use.

A final limitation of the present study was that no students in the peer network condition used their AAC systems during baseline or post-observation. Thus, no information about the efficacy of the intervention along with AAC use can be determined. Currently, the effects of a peer network intervention along with the use of an AAC system are inconclusive. Research

should investigate whether students with an AAC system would display great improvements if they used their devices.

Summary

Peer-mediated interventions have been shown to improve communication for children with developmental disabilities between the ages of 3 and 14 (see Neitzel, 2008; Owen-DeSchryver, Carr, Cale, & Blakeley-Smith, 2008). Yet, findings from this study indicate that high school students with developmental disabilities do not achieve the same communicative gains as young children. Students participating in peer support and peer network interventions did not significantly differ from students in the TAU group, in expressive, receptive, and social communication skills from baseline to post-observation. This study did, however, identify two important findings.

First and foremost, this study illustrated that students with poor communication skills requiring the need for an AAC system, as indicted by their IEP, benefit from peer support and peer network interventions, despite their failure to use their AAC systems. Both students in the peer support and peer network interventions displayed gains in the number of interactions with their classroom peers; however, students within the peer network intervention illustrated significantly fewer gains than the target students in the peer support condition. Furthermore, students in the peer support condition, that required the use of an AAC system but failed to use it, obtained an increase in the percentage of time they were engaged in consistent academic activities as their classroom peers, from baseline to post-observation. The peer network and TAU conditions did not differ in the amount of time target students were engaged from baseline to post-observation. Therefore, overall, students with poor communication skills participating in a peer support intervention displayed more benefits than students participating in a peer network

intervention. Students in the peer support intervention, requiring, yet failing to use their AAC systems still illustrated an increase in the frequency of peer interactions and time engaged in academics, while students in the peer network condition only demonstrated a slight increase in the number of peer interactions.

This study also provided evidence of additional benefits for students participating in a peer support intervention that needed and utilized their AAC system. Unfortunately, only 30 students required the need for an AAC system. None of the 30 students utilized their AAC system during baseline observations and only one student used their device consistently at post-observation. This illustrates poor implementation of students' IEPs, which is a significant concern. The student who consistently used their AAC system displayed significantly more interactions than the other peer support students who did not utilize their systems during treatment (see figure 6). Additionally, this individual on average interacted with more peers than the other individuals in the peer support condition, and displayed a higher percentage of academic engagement. While it is difficult to draw any strong conclusions based off the results of a single individual, this data does suggest a strong need for further research. If future studies are able to replicate these findings, this may significantly help individuals with poor communication skills that require an AAC system to achieve greater social and academic potential.

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Appendix A

Wisconsin Department of Public Instruction Cognitive Disability Eligibility Checklist

Wisconsin Department of Public Instruction
ELIGIBILITY CHECKLIST
COGNITIVE DISABILITY
ELG-CD-001 (Rev. 04-12)

This form is provided for local use only.

INSTRUCTIONS: This form is provided to assist school district individualized education program (IEP) teams in determining if a student appropriately can be determined to have an impairment under Chapter 115, Wis. Stats., and the eligibility criteria established in PI 11.36, Wis. Admin. Code. The IEP team should complete this form to document determination of eligibility for special education services and keep it on file with the student record.

Student Name	Date of Eligibility Determination

Cognitive disability means significantly subaverage intellectual functioning that exists concurrently with deficits in adaptive behavior and that adversely affects educational performance. Criteria for an impairment in the area of cognitive disability can be documented as follows:

SECTION I. INTELLECTUAL FUNCTIONING (One *must be checked Yes.*)

☐ Yes ☐ No The child has a standard score of two or more standard deviations below the mean.

Data used to support determination:

OR

☐ Yes ☐ No The child has a standard score between one and two standard deviations below the mean, and
The child has been documented as having a cognitive disability in the past, and
The child's condition is expected to last indefinitely.

Data used to support determination:

Section II. ADAPTIVE BEHAVIOR (Must be checked Yes.)

☐ Yes ☐ No The child has deficits (interpreted to mean two or more of the age related adaptive behavior areas) in adaptive behavior as demonstrated by a standard score of two or more standard deviations below the mean. These areas include: *Check all that apply*.

- ☐ Communication (from age 3-21)
- ☐ Self-care (from age 3-21)
- ☐ Social skills (from age 3-21)
- ☐ Home living skills (from age 6-21)
- ☐ Appropriate use of resources in the community (from age 6-21)
- ☐ Self-Direction (from age 6-21)
- ☐ Health and Safety (from age 6-21)
- ☐ Applying academic skills in life (from age 6-21)
- ☐ Leisure (from age 6-21)
- ☐ Work (from age 14-21)

Adaptive behavior areas that were found deficit:

Data used to support determination:

SECTION III. ACADEMIC FUNCTIONING (*One must be checked Yes.*)

☐ Yes ☐ No The child is **age 3 through 5** and has a standard score of two or more standard deviations below the mean in at least two of the following areas: *Check the appropriate areas.*

- ☐ Academic readiness
- ☐ Comprehension of language or communication
- ☐ Motor skills

Data used to support determination:

OR

☐ Yes ☐ No The child is **age 6 through 21** and has a standard score of two or more standard deviations below the mean in **general information** and

Data used to support determination/explanation of results:

In at least **two** of the following areas: *Check the appropriate areas.*

- ☐ Written language
- ☐ Reading
- ☐ Mathematics

Data used to support determination:

Appendix B

Tennessee Department of Education Intellectual Disability Eligibility Checklist

Intellectual Disability
Assessment Documentation

School System_____ School_____ Grade_____
Student_____ Date of Birth____/_____/_____ Age____

1. Definition		
▪ significantly impaired intellectual functioning, existing concurrently with adaptive behavior deficits and manifested during the child's developmental period that adversely affect his/her educational performance	❑ Yes	❑ No
2. Evaluation Procedures		
▪ significantly impaired intellectual functioning, which is ≥ 2 standard deviations below the mean on an individually administered, standardized measure of intelligence	❑ Yes	❑ No
○ intelligence test instrument(s) selected that are sensitive to cultural, linguistic or sensory factors	❑ Yes	❑ No
○ test interpretation that takes into account SEM and 68th percent confidence level	❑ Yes	❑ No
▪ adaptive home behavior composite score of ≥2 standard deviations below mean of an individually-administered, standardized instrument	❑ Yes	❑ No
▪ additional documentation with systematic observations, impressions, developmental history was obtained for home adaptive behavior	❑ Yes	❑ No
▪ significantly impaired adaptive behavior determined by systematic observations in the child's educational setting which compares & addresses age-appropriate adaptive behaviors for child's chronological age	❑ Yes	❑ No
▪ additional adaptive school behavior composite score of ≥ 2 standard deviations below mean of an individually-administered, standardized instrument	❑ Yes	❑ No
▪ intelligence and adaptive behavior evaluation results interpretation addresses and makes a determination that the student's performance on the test is not due to the following factors and is *not the primary reason* for significantly impaired scores on measures of intelligence or adaptive behavior.		
○ limited English proficiency	❑ Yes	❑ No
○ cultural background and differences	❑ Yes	❑ No
○ medical conditions that impact school performance	❑ Yes	❑ No
○ socioeconomic status	❑ Yes	❑ No
○ communication, sensory, or motor abilities	❑ Yes	❑ No
▪ history indicates delays in cognitive abilities (intellectual impairment) manifested during the developmental period (birth through 18)	❑ Yes	❑ No
▪ documentation (observation and/or assessment) of how Intellectual Disability adversely impacts educational performance	❑ Yes	❑ No

_____ _____/_____/_____
Signature of Psychologist Date

_____ _____/_____/_____
Signature of Psychologist Date

_____ _____/_____/_____
Signature of Psychologist Date

Appendix C

Wisconsin Department of Public Instruction Autism Eligibility Checklist

Wisconsin Department of Public Instruction
ELIGIBILITY CHECKLIST
AUTISM
ELG-AUT-001 (Rev. 07-09)

This form is provided for local use only.

INSTRUCTIONS: This form is provided to assist school district individualized education program (IEP) teams in determining if a student appropriately can be determined to have an impairment under Chapter 115, Wis. Stats., and the eligibility criteria established in PI 11.36, Wis. Admin. Code. The IEP team should complete this form to document determination of eligibility for special education services and keep it on file with the student record.

Student Name	Date of Eligibility Determination

Criteria for impairment in the area of autism can be documented as follows:

Section I. (*Both must be checked Yes.*)

☐ Yes ☐ No The child displays difficulties or differences or both in interacting with people and events. The child may be unable to establish and maintain reciprocal relationships with people. The child may seek consistency in environmental events to the point of exhibiting rigidity in routines.

☐ Yes ☐ No The child displays problems which extend beyond speech and language to other aspects of social communication, both receptively, and expressively. The child's verbal language may be absent or, if present, lacks the usual communicative form which may involve deviance or delay or both. The child may have a speech or language disorder or both in addition to communication difficulties associated with autism.

Section II. (*At least one must be checked Yes.*)

☐ Yes ☐ No The child exhibits delays, arrests, or regressions in motor, sensory, social or learning skills. The child may exhibit precocious or advanced skill development, while other skills may develop at normal or extremely depressed rates. The child may not follow developmental patterns in the acquisition of skills.

☐ Yes ☐ No The child exhibits abnormalities in the thinking process and in generalizing. The child exhibits strengths in concrete thinking while difficulties are demonstrated in abstract thinking, awareness and judgment. Perseverant thinking and impaired ability to process symbolic information may be present.

☐ Yes ☐ No The child exhibits unusual, inconsistent, repetitive or unconventional responses to sounds, sights, smells, tastes, touch or movement. The child may have a visual or hearing impairment or both in addition to sensory processing difficulties associated with autism.

☐ Yes ☐ No The child displays marked distress over changes, insistence on following routines, and a persistent preoccupation with or attachment to objects. The child's capacity to use objects in an age-appropriate or functional manner may be absent, arrested or delayed. The child may have difficulty displaying a range of interests or imaginative activities or both. The child may exhibit stereotyped body movements.

Appendix D

Tennessee Department of Education Autism Eligibility Checklist

Autism

Assessment Documentation

School System_____ School_____ Grade_____

Student_____ Date of Birth____/_____/_____ Age____

1. Definition		
Student's characteristics evident before age three (3) include		
○ difficulty relating to others or interacting in a socially appropriate manner	❑ Yes	❑ No
○ absence, disorder, or delay in verbal and/or nonverbal communication	❑ Yes	❑ No
○ insistence on sameness as evidenced by restricted play patterns, repetitive body movements, persistent or unusual preoccupations, and/or resistance to change	❑ Yes	❑ No
○ unusual or inconsistent responses to sensory stimuli	❑ Yes	❑ No
Student's characteristics evident after age three (3) include		
○ significant affects in verbal and nonverbal communication and social interaction		
○ engagement in repetitive activities and stereotyped movements		
○ resistance to environmental change or change in daily routines		
○ unusual responses to sensory experience		
▪ student meets criteria or has been diagnosed with an Autism Spectrum Disorder, including Autism, PDD-NOS, Asperger's Syndrome, PDD, Rett's, or Childhood Disintegrative Disorder	❑ Yes	❑ No
2. Evaluation Procedures		
▪ parental interview (including developmental history	❑ Yes	❑ No
▪ behavioral observations in 2 or more settings	❑ Yes	❑ No
▪ physical and neurological information from a licensed physician, pediatrician, or neurologist:	❑ Yes	❑ No
○ Report provides general health history evaluating the possibility of other impacting health conditions	❑ Yes	❑ No
○ Name of physician: _____ Date of report_____		
• evaluation of speech/language/communication skills	❑ Yes	❑ No
• evaluation of cognitive/developmental skills	❑ Yes	❑ No
▪ evaluation adaptive behavior and social skills	❑ Yes	❑ No
▪ documentation (observation and/or assessment) of how Autism Spectrum Disorder adversely impacts the child's educational performance	❑ Yes	❑ No

_____ _____/_____/_____

Signature of Speech/Language Therapist Date

_____ _____/_____/_____

Signature of Assessment Team Member Date

_____ _____/_____/_____

Signature of Assessment Team Member Date

_____ _____/_____/_____

Signature of Assessment Team Member Date

_____ _____/_____/_____

Signature of Assessment Team Member Date

Appendix E

Observation Information Sheet

Date:_____ **Class:** _____ **Student code:** _____ **Primary/IOA:**_____/_____

Persons in Classroom (start/end)
General educators: ____/____ Students: ____/____ Special educators: ____/____ Other adults: ____/____

Tally of different peers interacted: (PS):_____(Other Peer): _____Total: (PS):_____(Other P)_____

Communication modes used by the focus student during peer interactions:
❑ None ❑ Non-speech vocalizations ❑ Facial expressions ❑ Gestures ❑ Signs ❑ Speech ❑ Aided systems (specify:_____)

Quality of Interaction ❑ No Interactions
Reciprocity ❑ High ❑ Medium ❑ Low *Content* ❑ Appropriate ❑ Neutral ❑ Inappropriate ❑ N/A
Affect ❑ Positive ❑ Neutral ❑ Negative *Responses* ❑ Mostly Related ❑ Somewhat related ❑ Not related ❑ N/A
Overall ❑ 5/High ❑ 4/Medium-high ❑ 3/Medium ❑ 2/Medium-low ❑ 1/Low

Support Behaviors Demonstrated by *SEA and Peers*			**Conversation Topics Addressed during Peer Interaction**
SEA	**Peer**	**Academic-related supports**	❑ Task-related
❑	❑	Motivate/encourage the student	❑ Peers
❑	❑	Redirect when the student is off-task	❑ Greetings and Social Amenities
❑	❑	Assist with completing class assignments	❑ Food
❑	❑	Assist in taking notes or share notes (with peers)	❑ Jokes
❑	❑	Sharing class materials other than notes (with peers)	❑ School events (academic)
❑	❑	Prompt the student to answer a academic question	❑ School and after-school events (social)
❑	❑	Help the student participate in a group activity	❑ Outside-school events
❑	❑	Paraphrase lectures or discussions (review class content)	❑ Television, movies, bands, and celebrities
❑	❑	Modify/adapt assignments during the class period	❑ Money
❑	❑	Read aloud a book section or assignment	❑ Work and employment
❑	❑	Write down answers given orally or with a aided device	❑ Indiscernible
❑	❑	Help the student keep organized	❑ Others:_____
❑	❑	Other_____	❑ Others:_____
SEA	**Peer**	**Social-related supports**	**Class Activities or Topics:**
❑	❑	Prompt the student to interact with other classmates	
❑	❑	Encourage other classmates to interact with the student	
❑	❑	Explicitly teach the student specific social skills	
❑	❑	Prompt the student to use aided communication devices	
❑	❑	Praise social/communication attempts/behaviors	**Negative interactions:**
❑	❑	Provide emotional support or give advice	
❑	❑	Other _____	
SEA	**Peer**	**Other supports**	**Challenging behaviors:**
❑	❑	Help the student self-manage own behaviors	
❑	❑	Explain class rules	
❑	❑	Explain class schedule	
❑	❑	Other _____	
Notes for data entry:			

Peer Comparison 1- Gender: M F Race/ethnicity _____
Peer Comparison 2- Gender: M F Race/ethnicity _____

Appendix F

Observational Codes

Lily

Level 1: Focus Student and Peer Interaction Behaviors

Initiations and responses are defined as verbal or nonverbal (e.g., gestures, signs) communicative behaviors directed toward a classmate. Each conversational turn is counted separately without regard to length of utterance.

Each communicative behavior is coded according to its topic (i.e., task- or social-related), source (i.e., student with disabilities, peer without disabilities, or peer support without disabilities), and function (i.e., initiation or response).

Initiations and responses are to be coded as task-related if they address activities, materials, or expectations related to the current class (e.g., comments or questions concerning class assignments, group projects, course content; discussing an upcoming test in this class).

Initiations and responses unrelated to the current class are to be coded as social-related (e.g., social amenities and comments or questions concerning peers, popular culture, other school events, other classes, and out-of-school activities). In other words, everything else except conversations about the class in which they are in is social related.

Behaviors such as reading aloud to oneself, echolalic behavior, and conversations with teachers, paraprofessionals, or other adults are not to be coded as initiations or responses. Facilitated communication (when an adult guides the hand of the student with disability to type or write) is also NOT coded as interactive behaviors as it does not involve communication from the student with disability.

Contributions to interactions are to be recorded separately for (a) participants with significant disabilities, (b) classmates without disabilities with whom the participants were interacting (i.e., "peers" on Lily), and (c) classmates without disabilities who have agreed to serve as "peer supports" (i.e., "Support" on Lily)

Communicative behaviors are considered initiations if they are preceded by at least five seconds without an interaction or if they reflect a change in topic (e.g., task- to social-related or vice versa). All other communicative behaviors are coded as responses. This level of detail will provide information on initiation, direction, continuation, and reciprocity of peer interactions that the focus student has in the classroom.

How do you code interactions between the focus student and other peers with disabilities?

Only code social exchanges that occur among the focus student and peers without significant disabilities. If there are other students with significant disabilities in the class, DO NOT code any interactions occurring between the focus student and peers with significant/obvious disabilities (e.g., students who have a physical disability or receive support from a paraprofessional). In

addition, do not record proximity to peers with significant disabilities. Use the same rules when collecting peer comparison data; do NOT code interactions occurring between the comparison peer and peers with significant disabilities (including the focus student) and do not code proximity to a peer with significant/obvious disabilities and to the focus student. [If you anecdotally note lots of interactions with other students with significant disabilities, just note this in narrative form on the written observation sheet.]

How do you code interactions involving both an adult and a peer?

Code any interactions that are clearly directed to a *specific* peer or group of peers. If an adult (teacher or paraprofessional) is present, but the focus student's initiation or response is clearly directed to both the adult AND a peer, code the interactive behavior as a peer interaction. If both a teacher and peers are present and the focus student makes a general comment not directly toward a specific peer, do NOT count it. In other words, in a group setting, the default is not to count a comment unless there is compelling reason to think the focus student intended to elicit a response from a peer. This is discerned by considering the content of the comment, the persons whom the focus student is looking at, and/or the context of the activity.

Student or Peer/Peer Support Initiations

Initiations are any initial or new interactive behavior demonstrated by the focus student to specific peer(s)/peer support(s), or by a specific peer/peer support toward the focus student ***with clear communication intent to evoke a response***.

Initiations from the focus student or peers toward each other may occur with or without prompts from adults. If two students initiate toward each other at the same time (e.g., say hi simultaneously), the default is to code the focus student as the initiator.

Code a new initiation if five seconds elapses between two interactive behaviors, when there is an introduction of a new topic (from academic to social, or vice versa), or the focus student joins an ongoing conversation. Therefore, a new initiation may be a statement that is produced after five seconds of a previous response, a new statement that occurs five seconds after the first initiation, a change of topic (from task to social or vice versa), or when the SWD joins an ongoing conversation among peers that was not already being coded.

Note: When determining whether five seconds have elapsed, always begin counting at the END of the last person's speech whether or not that person's speech was coded.

How do you code initiations involving a group of students?

If a focus student initiates to a group of peers, code it as an initiation from the focus student toward peers. To avoid overestimating the number of different peers who interact with the focus student, when the focus student initiates toward a group of peers, only count the number of peer(s) who respond to the initiation as Different Peers Interacted unless the focus student's initiation is overtly directed to every peer in the group.

If a peer initiates toward a group of students including the focus student, code as an initiation if the peer's interactive behaviors clearly directed toward or includes the focus student (i.e., the

initiation is intended to elicit responses from the focus student along with other students).

*Rule of thumb: If you are not sure if an initiation is produced toward the focus student or peers, put yourself in the situation of the person in question and see if you would feel that the initiation is directed toward you. However, an initiation may not always be recognized by the intended respondent.

Examples:

- A peer says to the focus student, “Hey, let’s go!”
- A peer asks a group of students, including the focus student, “Are any of you coming to the dance tonight?”
- A classmate passes a worksheet to the focus student and also says, “Here you go.” (The phrase “here you go” is what is being coded as an initiation.)
- The focus student turns his head to look and smile at a peer, which results a high-five from the peer.
- A focus student gives/shows a peer his artwork (with or without speech).
- The focus student asks a teacher and a peer, “Hey, what do you guys think about my painting?”
- The focus student waves to a peer, who is looking down and does not respond.
- The focus student raises his hand to initiate a “high five” with a peer.
- The focus student makes a comment toward a group of classmates.
- The focus student walks up to a peer and shows her something in a book by pointing and looking up at the peer.
- A peer passes a sheet to the focus student (not an initiation) and the focus student says, “Thanks!” (an initiation).
- A peer support tells the focus student to open her book (i.e., an initiation) and the focus student follows the command without saying anything (not a response). After 5 seconds, the peer support tells the student to find the right page (i.e., another initiation).
- The focus student passes a peer a note or a calculator with “hello” (or some other words) typed on it (an initiation), the peer looks at the note and smiles back (an response).

Nonexamples:

- The focus student is talking aloud toward the entire class but the initiation is not clearly directed toward any specific peers.

- During a small-group discussion, the focus student is making a comment toward a teacher. A peer laughs at the comment (not an initiation, as the comment is not clearly directed toward the focus student) and the focus student turns to the peer and says, "What's so funny?" (initiation)

- The focus student is walking by a teacher and a group of peers while making a comment not directed toward a specific person, "Oh, I forgot to bring back the permission slip for the field trip."

- A peer is talking to the teacher and the focus student is looking or smiling at the peer.

- While distributing worksheets to the entire class, a classmate walks by the focus student and leaves a worksheet in front of the focus student.

- The paraprofessional says to the focus student, "Say hi." The focus student looks at the peer support for couple seconds and turns his head away.

- A peer who sits next to the focus student makes a comment to herself, "I wish I had remembered to bring the permission slip back today."

- A peer passes a worksheet to the focus student's hands without looking.

- A paraprofessional is guiding the focus student's hands over a keyboard (i.e. facilitated communication).

Student or Peer/Peer Support Response

A **response** is any facial expression, vocalization, gesture, or augmentative behavior demonstrated by the focus student or any peer(s) without significant disabilities that overtly follows and adds to an initiation or response from peers or the focus student. The response can be related or unrelated (you will record this on the information sheet) to the topic or question and is produced within five seconds of the completion of the last initiation or response. The response must have communicative intent. Responses from the focus student or peers toward each other may occur with or without prompts from adults.

How do you differentiate between acknowledging behaviors and responses?

Do not code behaviors that are just acknowledgments. Acknowledging behaviors are defined as gestural or verbal behaviors that do not add any new information to the ongoing conversation and simply demonstrate attention to the conversation. **If you could replace the comment or gesture with a head nod or "I hear you" and have the same meaning, this is an acknowledging behavior and should not be coded. If the comment adds to the conversation**

or presents the speaker's personal position on a matter, this does count as a response and should be coded. For example, if the person's comments endorse, agree with, or disagree with the other speaker's comments, these are responses.

During normal conversation, the 'listener' often says 'yeah', 'uh-huh', 'right' or uses other similar verbal statements or head nods just to show he or she is listening. If this occurs and the statement just shows that the listener is following the stream of conversation, these are acknowledgments and are NOT coded. However, these same statements can sometimes be framed in such a way that they are adding to the conversation. For instance, if a student says "Math is stupid!" and the focus student responds, "That's true!", the phrase "that's true" would count as a response because it is showing the focus student's personal position on the matter. Likewise, sometimes these comments and nods can be answers to questions. In this case, they are also coded. For example, if a student asked the focus student, "Did you bring your book today" and the focus student said "yeah" or nodded, these would count as responses because they are adding to the conversation. Finally, sometimes these comments are asked in a way that is asking a question and these would be coded as responses. For instance, if a student said, "I figured out what I'm writing for my paper" and the focus student responded, "Yeah??" in a way that seemed designed to elicit more information, this yeah would count as a response.

If, in the moment, you can't decide whether a comment or gesture was an acknowledging behavior (which wouldn't be coded) or a response (which would be coded), default to NOT coding. It must be clear that an occurrence is truly a response in order to code it.

What do you do if a comment is interjected while the other person is still talking?

If a second person interjects while the first person is still talking, code a response from the person who interjected but do not code the original speaker again if the original speaker just continues their speech as if the second person hadn't said anything. Do code another response from the original speaker if they had stopped talking and restart talking or if their comment somehow reflects or changes because of the interjector's comment.

How do you code behavioral responses?

Do not code any behavioral responses as communicative responses. Only code social responses with clear communicative intent back to the initiator as responses. For example, code an initiation if a peer support asks the focus student to use both hands to shape a clay pot. If the focus student simply follows this command by placing her hands on the pot without saying anything back to the peer support, do NOT code this as a response (it is considered a behavioral response not a social response). However, if the focus student says, "ok" or "no way" or asks for help, code it as a social response.

How do you deal with group situations?

During group discussions involving multiple peers, after coding the first initiation (either from the focus student or from a peer), code any subsequent interaction behaviors (either initiations or responses) between the focus student and any other peers (e.g., different peers join the conversation later) as responses as long as the interaction behavior occurs within five seconds of the completion of the previous interaction/response and the topic is consistent. One exception is

when the focus student explicitly invites a new peer (who has not been previously involved) to join the conversation; in this case, code as an initiation from the focus student. **If at any time, the topic changes, a new initiation should be coded.**

In group settings, code as peer (or peer support) responses all statements that are explicitly directed toward the focus student. If a peer in the group responds to another peer's comment, do not code this. As always, if you put yourself in the shoes of the focus student and would feel the need to respond, this is a good indication that the previous speech may have been a response.

Examples of group situations:
Tom is the focus student; Kathy is a peer support; Gina is a general education peer

Example 1:
Tom "Hey, guys. How are you?" (SWD Social Initiation) Kathy "I'm great!" (PS Social Response) Gina "I'm doing okay. How are you?" (Peer Social Response) Tom "I'm doing good." (SWD Social Response)

Example 2:
Tom "Hey, guys. How are you?" (SWD Social Initiation) Kathy "I'm great! I just got a new video game." (PS Social Response) Gina "You got a new video game? Which one?" (Do not code as it is not directed toward Tom) Kathy "World of Warcraft" (Do not code as it is not directed toward Tom) Tom "Oh cool! I want that video game!" (SWD Social Response)

Helpful hint: If two people start talking at the same time, default to coding the student with disability.

<u>Examples of Responses:</u>

- A peer asks the student, "What type of music do you like to listen to?" The focus student turns on her communication device and activates a message, "Lady Gaga."

- The focus student asks a peer support, "Can I borrow your pencil?" The peer support passes a pencil and says, "Here."

- A peer makes a comment toward the focus student and another classmate, "Don't you guys think that's pretty cool?" The focus student nods and responds with vocalization, "Hmm."

- A peer network member waves and says hi to the focus student, the focus student turns his head and smiles at the peer (facial expression that explicitly addresses an initiation will be coded as a response if it is the primary means of communication for the student).

- A peer asks the student, "What do you like to do on the weekend?" The focus student responds, "It is snowing outside."

Non-examples:

- The focus student calls a peer, “Hey!” The peer turned his head and looked back to the student but did not say anything (a behavioral response).

- During a group discussion involving the focus student and three peers, the focus student turns to a fourth peer who is not involved in the conversation and asks, “Did you see that movie?” (initiation from the focus student)

- A peer asks the student, “What type of music do you like to listen?” The focus student looks away (no response).

- A peer laughs at the focus student’s comments while the focus student is still talking.

- A peer support asks the focus student to go get a book (initiation from peer support) and the student gets the book without saying anything (no response).

- In response to a peer’s question, a paraprofessional guides the focus student’s hands over a keyboard to type a response (i.e. facilitated communication; facilitated communication is never coded).

Instructional Format (duration)

Instructional groupings for *the focus student* should be coded as one of the following mutually exclusive and exhaustive categories. This variable should reflect the instructions received by the focus student (which may or may not align with the rest of the class). At the beginning of each observation, code the instructional format for the focus student and code any subsequent changes in this variable only *after five seconds* have elapsed after going from one state to another (if one instruction changes to another but changes back within five seconds, do NOT change the code).

*Rule of thumb: The code remains the same unless there is a *compelling reason to change*. Thus, if it seems that the instructional format will go back to the original code quickly, do not change the code, even if the change is more than five seconds.

Large Group

The focus student, along with seven or more students (i.e., eight or more total students in the large group), is receiving ongoing instruction primarily from a teacher or paraprofessional (or a co- teaching arrangement). If a paraprofessional is supporting the student with disabilities to participate in large group activities, code as large group (not 1:1 adult).

> Examples: The teacher is lecturing about specific topics, giving instructions on how to complete a class project, going over previous assignments, or leading a class discussion in which all or most students are expected to participate or attend; students are asked to get out materials/supplies related to ongoing large group instruction.

Non-examples: School-wide announcements (no instruction); see other instructional grouping categories

Small Group

The focus student is working cooperatively with two to six other classmates on a class project, task, or assignment (i.e., between three and seven total students in the small group). The small group may be directly taught or facilitated by a teacher, paraprofessional, or peer.

Examples: The focus student is working in a small group to observe plants using worksheets, search books or the internet to complete a report or solve problems.

Nonexamples: see other instructional grouping categories

Independent Work

The focus student is **primarily** working independently on tasks assigned by the teacher or the paraprofessional, ***without*** the ongoing assistance of peers or paraprofessional. Occasional, brief help from a peer or an adult is okay and should still be coded as Independent Work. Ongoing or regular help from a peer would be considered 1:1 peer. While students are working on their individual assignments, the teacher may move around, check students' individual progresses, and provide intermittent instructions or feedback to individual students and/or the entire class.

Examples: The focus student is copying answers from the board or working on his or her worksheet independently.

Nonexamples: See other instructional grouping categories

1:1 Peer

The focus student is primarily working with only one other peer. At this time, the focus student may or may not receive support from a paraprofessional. 1:1 peer tutoring or peer support arrangements should be coded as 1:1 Peer.

Examples: The focus student is working on his or her project with support from a peer support. The focus student is paired with a peer to participate in a class activity. Students are paired together to tutor each other on an assignment or a lab project

Nonexamples: See other instructional grouping categories.

1:1 Adult

The focus student is primarily working with an adult (paraprofessional or general educator) on his or her own.

Examples: The focus student is receiving instructions from a paraprofessional during the class's individual work time.

Nonexamples: See other instructional grouping categories

No Instruction

The focus student has not been assigned any tasks or assignments, has completed assigned activities and is given "free time," or is undergoing a long-period transitioning from one context/activity to another context (e.g., changing from large- group instruction in one classroom to small-group instruction in a different classroom, leaving the classroom, etc.). In essence, the student is not expected to be doing any specific class-related work during this time. **During this condition, academic engagement should be coded as not engaged.**

*Rule of thumb: The code remains the same unless there is a *compelling reason to change*. If you are not sure if there is a change in the instructional format, the default is to keep the format unchanged. Thus, do not code no instruction if the focus student is going through a brief transition.

Examples: The teacher is taking attendance, or the focus student is sitting at desk at the beginning of class or listening to general announcements from broadcasting or from the classroom teacher (e.g., about school events), waiting for the teacher to arrive in the room or to begin class, or finished with work and lacks another assignment to move on to.

Nonexamples: See other instructional grouping categories.

Gone

The focus student has not yet arrived in the classroom or has left the classroom. The student should be coded as unengaged during this time.

Examples: The focus student has not arrived in the room when the bell rings, leaves to go to the restroom, or leaves the class early to go to his locker.

Nonexamples: See other instructional categories

Sources: adapted from Carter et al. (2005); Logan, Bakeman, & Keefe (1997); Wallace, Anderson, Bartholomay, & Hupp (2002)

Academic Engagement (duration)

The following academic engagement measures will be coded for the focus student with disabilities. These measures are mutually exclusive and exhaustive. Code any changes in this variable *only after five seconds* have elapsed after going from one state to another.

*Rule of thumb: The code remains the same unless there is a **compelling reason to change** (i.e., the focus student's attention is clearly shifted from engaged to unengaged or from unengaged to engaged). Thus, if the student seems unengaged for more than five seconds but you have reason to believe that the student will be engaged again quickly, do not change the code (e.g., the student seems to be taking a small break and leans back in his/her chair for 15 seconds).

Active engagement (attending) is defined as: looking at materials (e.g., textbook, worksheet, overheads) related to ongoing instructional activities, looking at the teacher, writing related to the assigned activity, following teacher instructions/directions, raising hand, or asking questions of the teacher about instructional activities. Explicit teacher instructions (i.e., is the student doing what the teacher asked him/her or the class in general to do?) or observations of other classmates (i.e., is the student engaging in the same general behaviors as his/her classmates?) are sometimes helpful guides in determining what behaviors are expected at a given time if the focus student is receiving the same instructions as the rest of the class.

Sources: adapted from Callahan & Rademacher (1999); Firman, Beare, & Lloyd (2002); Umbreit, Lane, & Dejud (2004).

Engaged with Consistent Instructional Activities

The focus student is actively engaged in (i.e., attending to) instructional activities and/or tasks assigned by the teacher or the paraprofessional that are consistent or aligned with the content provided to the remainder/majority of the class (i.e., identical or appropriately modified from the class curriculum with respect to difficulty, modality, response format, length, and/or materials).

> Examples: The focus student is working with a peer or paraprofessional on an assignment using adapted materials, adapted worksheets that are similar to class content, or books on a lower reading level related to course content, following large- group instructions in a slower pace, or listening to the same lecture as the rest of the class.
>
> Nonexamples: See Engaged with Inconsistent, Unengaged.

Engaged with Inconsistent Instructional Activities

Code if the focus student is actively engaged in (i.e., attending to) instructional activities and/or materials assigned by the teacher/paraprofessional that are not consistent or aligned with the ***content*** provided to the remainder/majority of the class (i.e., not identical or appropriately modified from the class curriculum with respect to difficulty, modality, response format, length, and/or materials).

> Examples: Students coloring, completing other activities unrelated to the class theme/unit for the day, working on assignments from other classes—*all if assigned by a teacher*.
>
> Nonexamples: See Engaged with Consistent, Unengaged.

Unengaged in Instructional Activities

Code if the focus student is overly ***not actively engaged*** (i.e., attending to) in any instructional activities and/or tasks or if the focus student is actively engaged in activities and/or materials that are ***not assigned by a teacher or paraprofessional***. That is, the student does not actually appear to be 'learning' anything.

> Examples: Moving around the classroom during instructional activities, looking around the room or staring "off into space", not paying attention to a teacher lecture (i.e., not

looking at the teacher, writing, or writing), disrupting others, talking to peers when he/she is not supposed to, working on assignments for other classes (if not assigned by teacher), listening to class announcements and sleeping. Also includes the student not being provided any instructional materials or waiting for an assignment/activity to begin.

Nonexamples: See above engaged examples.

Source: adapted from Carter, Cushing, Clark, & Kennedy (2005)

Proximity (duration)

Code any of the following personnel who is in a body orientation, distance, and position that allows easy access for interaction with the focus student (i.e., about three feet or reachable length to touch that person). Code changes in this variable only after five seconds have elapsed after going from one state to another. Again, as a rule of thumb, only change proximity codes if there is a compelling reason to change the code. For example, if an SEA walks away to get something but looks to be coming back, don't change the code.

Proximity of Peers/Peer Supports

A peer without significant disabilities (e.g., peer support during pre-intervention, other classmates) is in a position that allows him or her to interact with the focus student easily (e.g., facing toward each other or sitting next to each other and facing the same direction). Proximity will be coded if the focus student and a peer do not have to drastically reposition themselves in order to work or interact with one another.

Examples: A peer is sitting directly next to or across table from the focus student. A peer is standing right behind the focus student in a line.

Nonexamples: A peer and focus student are sitting back to back at different tables, or the peer support is walking around the room and happens to be walking by the focus student. While providing instructions to the focus student, the paraprofessional stands next to the focus student and block the access for the focus student and peers to talk to each other.

Proximity of SEA or Special Educator

The support person (e.g., a paraprofessional, special educator, speech language pathologist) is positioned within a distance that allows him or her to interact with or provide instructions to the focus student.

Examples: A paraprofessional is sitting directly next to the focus student and helping him or her to complete a worksheet. A special educator is standing behind the focus student during a large group lecture.

Nonexamples: The general educator is standing right next to the focus student. A paraprofessional from a different class stops by and says hi to the focus student.

Source(s): adapted from Carter, Cushing, Clark, & Kennedy (2005); Hughes, Carter, Hughes, Bradford, & Copeland (2002); Hughes et al. (1995, 1996); Mautz, Storey, & Certo, 2001)

Information Sheet

Number of Adults and Peers in the Classroom

This captures the number of peers and adults presented in the classroom in the beginning and at the end of the class.

Different Peers Interacted

This variable documents the number of different peers who had interactions with the focus student (through initiations or responses) during the observation session. Each new peer who interacts with the focus student is counted. If the focus student initiates toward multiple peers, only count the peers who respond to the initiation as peers interacted unless the initiation is overtly directed toward every peer in the group.

Communication Modes Used During Peer Interactions

Check all of the following behaviors that the focus student used toward peers during interactions that appear to have communicative intent.

- **None:** The focus student did not make any contributions to any interactions that occurred in the class (i.e., the focus student did not initiate or respond to any peer during the entire observation session).

- **Speech:** Single words, short phrases, whole sentences, and word approximations that are understood by the listeners that serve communication purposes (if the observer cannot distinguish between a word approximation and vocalization, code as speech)

  Example: the focus student produces a word approximation "Sure" in respond to a classmate's question, "Can I borrow your eraser?"
  Nonexamples: See other communication mode categories.

- **Vocalizations:** non-speech sounds with communication intents in which the words are not intelligible to the listener. "Not intelligible and not consistent to a specific referent to the listener" (Blackstone, 1991; Pasco et al., 2008).

  Example: The focus student uses voice to gain peer's attention.
  Nonexamples: See other communication mode categories (e.g., word approximations)

- **Facial expressions/affect/eye gaze:** generic or specific facial and visual behaviors that clearly serve communication purposes.

Examples: A peer asks the focus student, "Do you like swimming?" The focus student answers with a smile, "Yes, I go swimming at the YMCA with my sister and I like it."
Nonexamples: the focus student looks at the special education teacher who sits next to him and is giving instruction about completing a worksheet.

- **Signs:** "specific gestures that are taken or adapted from formal sign language vocabularies" that serve communication purposes (Blackstone & Berg, 2003). □

  Examples: the focus student touches a peer's shoulder and uses a sign to ask for help.□
  Nonexamples: see other communication mode categories.

- **Gestures:** body movements that clearly serve communication purposes, usually involved the use of the head or hands (e.g., headshakes, waving, high five, fist bump, pointing). If the focus student points to a picture to interact with a peer, code as an aided system. "Holding, touching, or taking an object does not count as a gesture unless the child is directing the gesture toward a partner" (Wetherby & Prizant, 2003). □

  Examples: The focus student waves while saying bye to a peer support. The focus student nods in response to a peer's question. □
  Nonexamples: The focus student turns pages in response to a peer's instruction.

- **Aided systems —external communication devices (non-electronic or electronic):** Any non-electronic displays of symbols/pictures/words/photos or any battery-operated electronic devices or computers that serve communication purposes. Non-electronic systems may be communication broads or books. Electronic devices usually have electronic or pre-recorded voice output, may be simple (limited storages of messages or inserted printed pictures) or complex (computerized programs that use digital pictures). Specify the type of aided system that the focus student uses during peer interactions. □

  Examples: A peer asks, "What's your weekend plan?" The focus student points to a picture on her communication board, "Shopping." The focus student activates a message from his device while facing the peer, "Want to hear a joke?" □
  Nonexamples: see other communication mode categories. □

Sources: adapted from Beukelman & Mirenda (2005); Blackstone (1991); Blackstone & Berg (2003); Kaiser & Grim (2006); Pasco et al. (2008); and Wetherby & Prizant (2003).

Quality of Peer Interaction□

By the end of each observation, rate the quality of peer interactions. This measure will reflect □the overall interaction experiences the students had across all of the peer interactions during the entire class period. Rate the reciprocity of interactions, the content of conversation, and students' affect in relation to other classmates' interactions. If no interactions with peer occurred during the observation, check the "no interactions" box. □

- **Reciprocity**□
  High: Overall, interactions were reciprocal and balanced (both the focus student and peers equally initiated and responded).□
  Medium: Peers initiated more than the focus student. The focus student occasionally initiated and often responded to peers' initiations.□
  Low: Peers were the primary initiators. The focus student rarely initiated and infrequently responded to peers' initiations. □

- **Content**
  Appropriate: The overall content of the student's peer interactions was similar to the interactions of other students in the class and was appropriate to the class context and the student's age (e.g., the focus student was talking about school events during free time).
  Neutral: The content of the student's peer interactions was a mix of appropriate and inappropriate topics and conversations.□
  Inappropriate: The content of student's peer interactions was mostly□dramatically different from the interactions other students had in the class, or was neither age-appropriate nor class context-related.

- **Affect**□
  Positive: Both the focus student and peers enjoyed the interaction exchanges as indicated by their positive affect (smiles and attentive body language) most of the time.□
  Neutral: Most of the interaction exchanges between the focus student or peers were accompanied with neither positive nor negative affect.□
  Negative: Most of the time, either the focus student or peers showed negative affect during interaction exchanges (e.g., angry, verbal/physical aggression, displeased).

- **Responses**□
  Mostly related: Most responses produced by the focus student and peers toward each other are related to the topic or questions that were asked.□
  Somewhat related: Most responses produced by the focus student and peers toward each other are related to the topic or questions that were asked with the exception of some incidences in which the focus student produced unrelated responses.□
  Not related: Noticeable amount of responses produced by the focus student and peers toward each other are NOT related to the topic or questions that were asked.

- **Overall quality based on reciprocity, content, affect, and relevance.**
  5: High quality: The peer interactions that the focus student has are almost identical or very similar to what other peers have in the classroom.
  4: Medium-high quality
  3: Medium quality
  2: Medium-low quality
  1: Low quality: The peer interactions that the focus student has are significantly deviant from what other peers have in the classroom.

Sources: adapted from Bauminger (2007); Carter et al. (2005), Fryxell & Kennedy (1995); Hughes, Copeland et al., (2002); and Hunt et al. (1996).

Peers' and Support Person's Support Behaviors

Check off each of the support behaviors produced by peers (i.e., peer supports and other peers) and the support person observed during the session. This can be done in an ongoing fashion (i.e., check them off as they occur) or at the end of the class. Record any additional support behaviors you observed that did not fit into one of the existing categories.

Topic	**Definitions and/or examples**
Task-related	Academic-related conversations in the class in which the observation is taking place (e.g., borrowing materials or checking answers). See school events (academic) for conversations associated with other classes.
Peers	Conversations about other similar-age students (e.g., friends, other kids at school).
Greetings and social amenities	Behaviors performed to fulfill conventional social rules in a given situation (e.g., saying, "Hi, goodbye, excuse me, or thanks!").
Food	Substance that can be consumed to provide energy, nutrition, and hydration (e.g., talking about lunch choices or restaurant menus).
Jokes	Behaviors that are intended and/or resulted in laughter (e.g., acting silly or making funny faces).
School events (academic)	School activities that are academic-oriented or other classes that the student has or will take (e.g., taking about midterm exams, quizzes, assignments for other classes, or academic field trips).
School and after-school events (social)	School sponsored events that are social in nature (e.g., extracurriculars, school dance, musical, or swimming camps).
Outside-school events	Personal, family, or community activities that are not sponsored by the school (e.g., birthday party, family trips, or community parade.
TV, movies, bands, and celebrities	Conversations associated with TV shows, movies, music, or/and famous people (e.g., TV stars, movie reviews, or new CD releases).
Money	Conversations associated with money or hourly jobs (e.g., salary,

and work/employment	babysitting, or summer jobs).
Indiscernible	Conversations that cannot be heard or the topics cannot be discerned.
Other	Topics discussed that do not fit in the above categories (e.g., weather or heath). Please specify with examples.

Conversation Topics Addressed During Peer Interactions

Check off the type of conversation addressed during initiations or responses from the focus student to peers or from peers to the focus student throughout the entire session. This can be done in an ongoing fashion (i.e., check them off as they occur). Record any other topics you observed that did not fit into one of the existing categories.

Other Notes

Record the class activities or instructional topics, any negative interactive behaviors, challenging behaviors, and any other relevant information that may influence the data.

Appendix G

Peer Support Intervention Fidelity Checklist

Peer Supports Fidelity of Implementation Checklist/Check-In Notes

Student: _____ School: _____
Intervention Facilitator: _____ Coach/Observer (circle): _____
Date: _____
Peer Supports Present: _____

Circle Y (yes) or N (no) based on whether or not these behaviors occurred during the observation.

1. Y N Are peer supports in close proximity to the focus student during class?
   - Y N Do the students sit next to each other?
   - N/A Y N Do the students remain in close proximity during out-of-seat class activities?
   - N/A Y N During group activities, do the students join the same group?
   - Other? _____
   - When does proximity occur during class (circle all that apply):
   - Beginning Middle End

2. Y N Are peer supports interacting with the focus student in class?
   - Y N Do they gœt t the focus su dent (e.g. "Hi" or "see you later")?
   - Y N Do students engage in conversation?
   - Y N Do peer supports include the focus student in interactions with other peers?
   - Other? _____
   - When do interactions occur during class (circle all that apply):
   - Beginning Middle End

3. Y N Are peer supports assisting the focus student academically?
   - Y N Do the peer supports help the focus student participate in class activities?
   - Y N Do peer supports repeat or rephrase instructions for the focus student?
   - Y N Are peer supports appropriately prompting the focus student?
   - Y N Do peer supports provide appropriate feedback to the focus student?
   - Y N Do students work together on classroom activities?
   - Y N Do students share work materials?
   - Other? _____
   - When do support behaviors occur during class (circle all that apply):
   - Beginning Middle End

4. Y N Are facilitators supporting peer supports and the target student?
   - Y N Does the facilitator provide reminders/feedback to peer supports before, during or after class?
   - Y N Does the facilitator facilitate interactions during class when appropriate?
   - Y N Does the facilitator monitor students during class?
   - Y N Does the facilitator provide praise and feedback to students during or outside of class?
   - Other? _____

Notes from observation:

_____
_____
_____

Appendix H

Peer Network Intervention Fidelity Checklist

Peer Network Intervention Fidelity Checklist

Peer Network Fidelity of Implementation Checklist/Check-In Notes

Student: _____ School: _____
Intervention Facilitator: _____ Coach: _____
Date: _____
Peer Network Members: _____
Total number of students at meeting: _____

Circle Y (yes) or N (no) based on whether or not these behaviors occurred during the observation.

1. Y N Are peer partners and the focus student interacting during the meeting?
   - Y N Do students greet each other?
   - Y N Does the focus student initiate interactions with peer partners?
   - Y N Do peer partners initiate interactions with the focus student?
   - Y N Do students engage in a game or activity together?
   - Y N Do students engage in conversation together?
   - Other? _____

   When do interactions occur during the meeting (circle all that apply):
   Beginning Middle End

2. Y N Are peer partners and the focus student reporting that interactions occurred during the week (outside of the meeting)?
   - Y N Does the focus student ever initiate interactions?
   - Y N Do peer partners initiate interactions?
   - Y N Are these interactions reciprocal?
   - Y N Are interactions occurring at least once per day?
   - Y N Are interactions occurring between more than one peer partner and the focus student?
   - Other? _____

   How many students report interactions during the week? _____
   How many total interactions are reported? _____
   When were interactions reported as occurring (circle all that apply):
   Before school Between classes In class Lunch After school Weekend

3. Y N Are facilitators supporting peer partners and the target student?
   - Y N Does the facilitator provide structure and facilitate the meetings as needed?
   - Y N Does the facilitator check with peer partners weekly about interactions with the focus student?
   - Y N Does the facilitator monitor interactions during the meeting?
   - Y N Does the facilitator provide praise and feedback to students during or outside of the meeting?
   - Other? _____

Notes from observation:
_____
_____
_____
_____

Appendix I

Institutional Review Board Consent

Waisman Center
University of Wisconsin–Madison

1500 Highland Avenue • Waisman Center, Room A101 • Madison, WI 53705 • (608) 890-1687 telephone • (608) 265-3441 fax

Dear Special Educators and Paraprofessionals:

We invite you to participate in a research study examining the benefits of peer support arrangements on students with and without severe disabilities in high school classrooms. We hope to learn how the social relationships and academic engagement of students are impacted when students work together in general education classrooms. To this end, we are inviting youth with cognitive disabilities or autism, one or more of their classmates, and the school staff who support them in these classrooms to participate.

What Will My Participation Involve?
Peer support arrangements involve assisting one or more peers without disabilities to provide ongoing social and academic support to their classmate with severe disabilities. Our project will provide you with training on how to use this strategy and offer ongoing support as you establish peer supports in one classroom for a student with whom you work (see name on next sheet). This initial training workshop will last approximately 3 total hours. You will be shown how to invite peers, orient them to their roles, and support students as they work together throughout one semester. In addition, a member of the project team will be available throughout the semester to share ideas and assist you in this role.

What Information Will We Collect?
We will observe students as they work together and with you in the classroom four times *before* and four times *after* you have established peer supports. In addition, we would ask you to provide us with feedback on your involvement in the project and the extent to which you felt the strategies benefited students. This questionnaire will take about 10 minutes to complete. You may also be asked to provide us with ratings of the student with disabilities' social skills, everyday living skills, peer relationships, support needs, and educational progress in the classroom. Providing this written information will take about 60 minutes at the beginning and the end of the semester. We may also ask for a subset of this information again during each of the next two semesters.

Are There Any Benefits to Me?
As part of this project, you will learn an evidence-based strategy for supporting students in inclusive classrooms. We will also share back with you what we learn about how to include students in other aspects of school life from other facets of our project. In addition, you will receive a $200 stipend for each student for whom you set up peer supports., as well as $25 for each of the two information packets you may be asked to complete.

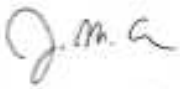
Are There Any Risks?
As we publish or present findings from this study, the names of participating students, teachers, and schools will never be used. To minimize the risk that any information we gather could be connected back to individual participants, we store all data securely in our project offices and de-identify it using codes. The researchers will be the only ones who view this information and individual information will not be shared with administrators at the school. This project has been approved by your high school; however, your participation is completely voluntary. If you decide not to participate—or to later withdraw from the study—it will have no effect on your employment status with the school.

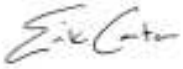
IRB Approval Date: 7/30/2013
Date IRB Approval Expires: 7/29/2014
FWA00005399 ED IRB
University of Wisconsin – Madison

What If I Want More Information?
We encourage your questions about the research at any time by contacting Dr. Jennifer Asmus at (608) 262-3027 or asmus@wisc.edu. In addition, copies of any of the assessments used in this project are available for you to see by request. Questions about your rights as a research participant should be directed to the Education Research IRB (608) 262-9710 or edirb@education.wisc.edu.

Please return the attached form indicating whether you agree to participate in this project.

Sincerely,





Jennifer Asmus, Ph.D.
Professor of School Psychology

Erik Carter, Ph.D.
Associate Professor of Special Education

IRB Approval Date: 7/30/2013
Date IRB Approval Expires: 7/29/2014
FWA00005399 ED IRB
University of Wisconsin – Madison

Teacher Permission Form

Name: _____ School: _____

Participating Student(s) with Disabilities: _____

Role: *(Check all that apply)* ☐General Educator ☐Special Educator ☐Intervention facilitator ☐SEA

☐ **YES**, I agree to participate in this study.

☐ **NO**, I do not wish to participate in this study.

If you checked yes, sign below to indicate that you have read the attached consent letter and voluntarily agree to participate.

_____ _____

Signature *Date*

Address: _____ Phone: _____

_____

_____ E-Mail: _____ (optional)

Please return this form in the envelope provided or to the following address. You may keep a copy of the letter.

Peer Partner Project (P3)
c/o Jennifer Asmus, Ph.D.
Waisman Center, Room A105
1500 Highland Ave
Madison WI 53705

Waisman Center
University of Wisconsin–Madison

1500 Highland Avenue • Waisman Center, Room A101 • Madison, WI 53705 • (608) 890-1687 telephone • (608) 265-3441 fax

Dear Parent of _____:

We invite you and your child to participate in a research study looking at the benefits of peer support arrangements on students with and without disabilities in high school classrooms. We hope to learn how the social relationships and learning of students with disabilities are improved when students work together during classroom activities. We are inviting students with cognitive disabilities or autism, along with one or two of their classmates, to participate in this study. Your child was randomly selected to participate in this part of our project.

What Are Peer Support Arrangements?
We will help teachers and/or paraprofessionals at the school identify one or more classmates without disabilities who will sit next to and provide help to your child in one general education class. These peers will first meet with school staff to learn more about your child and the ways in which they might interact with and help your child during class. Your child's teachers will decide which classmates are involved, the information that will be shared with them, and when they should and should not provide support. As students work together during the semester, your child will still receive needed support from their teachers. However, teachers are encouraged to have students gradually work together as independently as appropriate.

What Information Will We Collect?
We will observe your child and his/her peers as they participate in typical classroom activities four times *before* and four times *after* setting up the peer support arrangement. In addition, we would ask you to:

- Complete a questionnaire asking about your child's social relationships, his/her community activities, social and everyday skills, and support needs. We will ask for this information four different times: now, at the end of this semester, and at the beginning of each of the next two semesters. Each questionnaire will take about 45 minutes to finish and you can complete it by mail, telephone, or secure web survey.
- Allow teachers to provide us with ratings of your child's social skills, everyday living skills, peer relationships, support needs, and educational progress in the classroom.
- Allow the school to provide us a copy of your child's current class schedule and IEP, as well as let us view his/her cumulative records to collect disability assessment information, grades, and attendance information. This information will only be seen by research staff for the purpose of learning about students' educational background and progress.
- Allow us to ask your child how he/she liked being part of this project.

You will receive a $20 gift card for *each* of the four surveys that you complete.

What Are the Benefits to You and Your Child?
In our previous projects, students had more social interactions and class engagement when working with their peers versus receiving support only from adults. We also hope that students will develop new peer relationships that last past the semester. The strategies we learn from this project will be shared back with you, your child's school, and other participating schools.

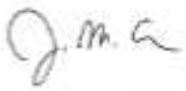
IRB Approval Date: 7/30/2013
Date IRB Approval Expires: 7/29/2014
FWA00005399 ED IRB
University of Wisconsin – Madison

Are There Any Risks?
In our previous projects, students have enjoyed having peer supports. However, should your child ever feel uncomfortable receiving help from peers or being part of this project, he/she may withdraw at any time by telling a teacher or project staff. We are also asking teachers to let us know of any signs that your child might want to stop. As we publish or present findings from this study, the names of participating students, teachers, and schools will never be used. To minimize the risk that any information we gather could be connected back to individual participants, we store all data securely in our project offices and de-identify it using codes. This project has been approved by your child's high school; however, you and your child's participation are completely voluntary. If you or your child decide not to participate or to later withdraw from the study there will be no consequences. Your child can continue receiving peer support even if you no longer want him/her to be involved in the research.

What If I Want More Information?
We encourage your questions about the research at any time by contacting Dr. Jennifer Asmus at (608) 262-3027 or asmus@wisc.edu. In addition, copies of any of the assessments used in this project are available for you to see by request. Questions about your rights as a research participant should be directed to the Education Research IRB (608) 262-9710 or edirb@education.wisc.edu.

Please return the attached form indicating whether you agree to participate in this project.

Sincerely,



Jennifer Asmus, Ph.D.
Professor of School Psychology

Erik Carter, Ph.D.
Associate Professor of Special Education

Permission Form

Parent/Guardian Permission:

❑ Yes ❑ No I give permission for my child to participate in this research project.

❑ *Check this box if your child's cannot provide signed permission. We will verbally ask your child for his or her permission.*

Student Permission:

❑ Yes ❑ No I am willing to participate in this research project.

If you checked **yes** above, sign below to indicate that you have read the attached letters and voluntarily agree to participate.

Parent/Guardian Name	Parent/Guardian Signature	Date
Student Name	Student Signature	Date

Address: _____ Phone: _____

_____

_____ E-Mail: _____ (optional)

High School: _____ Teacher: _____

Please return this form in the envelope provided or to the following address. You may keep a copy of the letter.

Peer Partner Project (P3)
c/o Jennifer Asmus, Ph.D.
Waisman Center, Room A105
1500 Highland Ave
Madison WI 53705

Waisman Center
University of Wisconsin–Madison

1500 Highland Avenue • Waisman Center, Room A101 • Madison, WI 53705 • (608) 890-1687 *telephone* • (608) 265-3441 *fax*

Verbal Assent Script

I am from the University of Wisconsin. We want to learn how high school students work together in their classrooms and make friends. This is called a research study.

If you want to, one of your teachers will find one,two, or three students with whom you will work. You will sit next to these students and they will help you during class. You can tell your teacher what kind of help you would and would not like. If there is a classmate who you want to work with, you can tell your teacher.

We will also sit in your classroom to watch about eight times this semester. We will ask your teacher about your learning goals and who you like to spend time with. And we will ask your parents about the things you do when you are not at school. Finally, we will ask you later how you liked being in the project.

We hope this project will help your teachers learn how to help you and other students make new friends and learn more at school.

Your parent(s) said is okay for you to do this. But, you do not have to do this if you do not want to. And if you ever want to stop working with your peers, that is okay. Just tell a teacher or us. It will be no problem. You or your parents can contact Dr. Jennifer Asmus at (608) 262-3027 or asmus@wisc.edu with any questions.

Would you like to work with your peers? ❑ Yes ❑ No

Can we watch in your classroom? ❑ Yes ❑ No

Name of Student: _____

Assent obtained by (please print): _____

_____ _____

Signature Date

IRB Approval Date: 7/30/2013
Date IRB Approval Expires: 7/29/2014
FWA00005399 ED IRB
University of Wisconsin – Madison

Waisman Center
University of Wisconsin–Madison

1500 Highland Avenue • Waisman Center, Room A101 • Madison, WI 53705 • (608) 890-1687 telephone • (608) 265-3441 fax

Dear Parent of _____:

We invite your child to participate in a research study looking at the benefits of peer support arrangements on students with and without disabilities in high school classrooms. We are interested in how students benefit socially and academically when they work together during classroom activities. We are inviting students with cognitive disabilities or autism, along with one or more of their classmates, to participate in this semester-long project. Your child is being invited because he/she was recommended by a teacher as someone who might enjoy and benefit from being a peer support during one class period.

What Are Peer Support Arrangements?

Peer support arrangements involve having a student with a disability and one or more classmates sit together, interact with each other, and work together during everyday class activities. For example, peer supports might help their classmate answer a question during class discussion, complete aspects of an assignment, participate in a group project, or meet other students in the class. A teacher or paraprofessional will meet with the peer supports to discuss how to talk with and support their partner with a disability. This training will take less than one hour and will take place at a mutually agreed upon time, such as during lunch or in a classroom before or after school. Throughout the semester, the adult will help the students work well together and provide any support they may need.

What Information Will We Collect?

We will observe participating students as they work together in typical classroom activities four times *before* and four times *after* setting up the peer support arrangement. In addition, we would ask you to:

- Allow the classroom teacher to provide us with their views on your child's social standing before and after their involvement in this project.
- Allow the school to provide us a copy of your child's current class schedule, attendance record, and grades before and after the project. This information will only be seen by research staff for the purpose of learning about students' educational background and progress.
- Allow your child to tell us about their school and extracurricular involvement at the beginning and end of the semester, and tell us how he/she liked being part of this project at the end of the semester. These brief questionnaires will each take about 10 minutes to complete.

What Are the Benefits to You and Your Child?

In our previous projects, students either maintained or improved their grades while serving as a peer support. Students have also told us that they enjoyed getting to know their classmates with disabilities. We hope similar benefits will come from this project. This project is designed to provide teachers with strategies they can use to improve to social relationships and learning of students with and without disabilities at their school.

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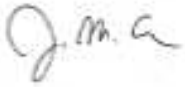
Are There Any Risks?
In our previous projects, students have enjoyed participating as a peer support. However, should your child ever feel uncomfortable being a part of this project, he/she may stop at any time simply by telling a teacher or a member of the project team. As we publish or present findings from this study, the names of participating students, teachers, and schools will never be used. To minimize the risk that any information we gather could be connected back to individual participants, we store all data securely in our project offices and de-identify it using codes. This project has been approved by your child's high school; however, your child's participation is completely voluntary. If you decide not to have your child participate or want to later withdraw him/her from the study, it will have no negative effect on the educational services your child is receiving. Your child can continue being a peer support even if you no longer want him/her to be involved in the research.

What If I Want More Information?
We encourage your questions about the research at any time by contacting Dr. Jennifer Asmus at (608) 262-3027 or asmus@wisc.edu. In addition, copies of any of the assessments used in this project are available for you to see by request. Questions about your rights as a research participant should be directed to the Education Research IRB (608) 262-9710 or edirb@education.wisc.edu.

Please return the attached form indicating whether you agree to participate in this project.

Sincerely,



Jennifer Asmus, Ph.D.
Professor of School Psychology

Erik Carter, Ph.D.
Associate Professor of Special Education

Permission Form

Parent/Guardian Permission:

❑ Yes ❑ No I give permission for my child to participate in this research project.

Student Permission:

❑ Yes ❑ No I am willing to participate in this research project.

If you checked yes above, sign below to indicate that you have read the attached letters and voluntarily agree to participate.

_____	_____	_____
Parent/Guardian Name	Parent/Guardian Signature	Date
_____	_____	_____
Student Name	Student Signature	Date

Address: _____ Phone: _____

_____

_____ E-Mail: _____ (optional)

High School: _____ Teacher: _____

Please return this form in the envelope provided or to the following address. You may keep a copy of the letter.

Peer Partner Project (P3)
c/o Jennifer Asmus, Ph.D.
Waisman Center, Room A105
1500 Highland Ave
Madison WI 53705

Waisman Center
University of Wisconsin–Madison

1500 Highland Avenue • Waisman Center, Room A101 • Madison, WI 53705 • (608) 890-1687 telephone • (608) 265-3441 fax

Dear Educator:

We invite you to participate in a research study examining the benefits of peer network strategies on students with and without severe disabilities in high school. We hope to learn how friendship and social participation are impacted when structured social groups are developed for students. To this end, we are inviting youth with cognitive disabilities or autism, several of their schoolmates, and a school staff member who is willing to facilitate this network to participate.

What Will My Participation Involve?
Peer network strategies involve establishing a small group of peers to interact with and support the social participation of a student with severe disabilities. Our project will provide you with training on how to use this strategy and we will offer you ongoing support as you establish a peer network for one student. This initial training workshop will last approximately 3 total hours. We will show you how to invite peers, lead network meetings, and support the participating students throughout one semester. Network meetings typically last about 30-45 minutes, occur every week or two, and take place at a time and location determined by the network, such as during students' lunch or in a classroom right before or after school. A member of the project team will be available throughout the semester to share ideas and assist you in this role.

What Information Will We Collect?
We will observe in a classroom of the student with severe disabilities four times *before* and four times *after* the peer network has been established. In addition, we would ask you to provide us with feedback on your involvement in the project and the extent to which you felt the strategies benefited students. This questionnaire will take about 10 minutes to complete. You may also be asked to provide us with ratings of the student with disabilities' social skills, everyday living skills, peer relationships, support needs, and educational progress in the classroom. Providing this written information will take about 60 minutes at the beginning and the end of the semester. We may also ask for a subset of this information again during each of the next two semesters.

A parent or guardian has already provided permission for their child with disabilities to participate in this project.

Are There Any Benefits to Me?
As part of this project, you will learn an evidence-based strategy for promoting the social participation of students with severe disabilities. We will also share back with you what we learn from other facets of our project addressing school inclusion and social relationships. In addition, you will receive a $200 stipend for each student for whom you set up a peer network., as well as $25 for each of the two information packets you may be asked to complete.

Are There Any Risks?
As we publish or present findings from this study, the names of participating students, teachers, and schools will never be used. To minimize the risk that any information we gather could be connected back to individual participants, we store all data securely in our project offices and de-identify it using codes. The researchers will be the only ones who view this information and individual information will not be shared with administrators at the school. This project has been approved by your high school; however, your participation is completely voluntary. If you decide not to participate—or to later withdraw from the study—it will have no effect on your employment status with the school.

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What If I Want More Information?
We encourage your questions about the research at any time by contacting Dr. Jennifer Asmus at (608) 262-3027 or asmus@wisc.edu. In addition, copies of any of the assessments used in this project are available for you to see by request. Questions about your rights as a research participant should be directed to the Education Research IRB (608) 262-9710 or edirb@education.wisc.edu.

Please return the attached form indicating whether you agree to participate in this project.

Sincerely,

Jennifer Asmus, Ph.D.
Professor of School Psychology

Erik Carter, Ph.D.
Associate Professor of Special Education

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Date IRB Approval Expires: 7/29/2014
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Teacher Permission Form

Name: _____ School: _____

Participating Student(s) with Disabilities: _____

Role: *(Check all that apply)* ❑General Educator ❑Special Educator ❑Intervention facilitator ❑SEA

❑ YES, I agree to participate in this study.

❑ NO, I do not wish to participate in this study.

If you checked yes, sign below to indicate that you have read the attached consent letter and voluntarily agree to participate.

_____ _____

Signature *Date*

Address: _____ Phone: _____

_____

_____ E-Mail: _____
(optional)

Please return this form in the envelope provided or to the following address. You may keep a copy of the letter.

Peer Partner Project (P3)
c/o Jennifer Asmus, Ph.D.
Waisman Center, Room A105
1500 Highland Ave
Madison WI 53705

Waisman Center
University of Wisconsin–Madison

1500 Highland Avenue • Waisman Center, Room A101 • Madison, WI 53705 • (608) 890-1687 telephone • (608) 265-3441 fax

Dear Parent of _____:

We invite you and your child to participate in a research study looking at the benefits of peer networks on students with and without disabilities in high school classrooms. We hope to learn how the friendships and school participation of students with disabilities are improved when a peer group is developed. We are inviting students with cognitive disabilities or autism, along with several of their schoolmates, to participate in this study. Your child was randomly selected to participate.

What Are Peer Network Groups?

We will help teachers and/or paraprofessionals at the school identify several peers without disabilities to be part of a peer network group. These peers will first meet with a school staff person to learn more about your child and the ways in which they might interact with your child during different times of the school day, such as between classes, at lunch, or before/after school. Your child's teachers will decide which classmates will be involved and what information will be shared with them. The peer group—along with your child—will meet together at school about every week or two during the semester to plan where and how they will interact together, as well as to brainstorm ideas for enhancing your child's social participation. Although a teacher or paraprofessional will facilitate the group, students will help plan and implement the group as independently as appropriate.

What Information Will We Collect?

We will observe your child and his/her peers as they participate in typical classroom activities four times *before* and four times *after* setting up the peer network group. In addition, we would ask you to:

- Complete a questionnaire asking about your child's social relationships, his/her community activities, and support needs, as well as your thoughts about this project. The questionnaire will be sent to you four different times: now, at the end of this semester, and at the beginning of each of the next two semesters. Each questionnaire will take about 45 minutes to complete and you can complete it by mail, telephone, or Internet.
- Allow teachers to provide us with ratings of your child's social skills, everyday living skills, peer relationships, support needs, and educational progress in the classroom.
- Allow the school to provide us a copy of your child's current class schedule and IEP, as well as let us view his/her cumulative records to collect disability assessment information, grades, and attendance. This information will only be seen by research staff for the purpose of learning about students' educational background and progress.
- Allow us to ask your child how he/she likes being part of this project.

You will receive a $20 gift card for each of the four surveys that you complete.

What Are the Benefits to You and Your Child?

In our previous studies, students had more social interactions and larger friendship networks when peer network strategies began. We are interested in whether any new relationships continue outside of school or after the semester. The strategies we learn from this project will be shared back with you, your school, and other participating families.

Are There Any Risks?

In our previous projects, students have enjoyed having peer networks. However, should your child ever feel uncomfortable meeting with peers or being part of this project, he/she may withdraw at any time by telling a

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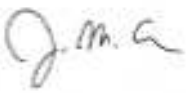
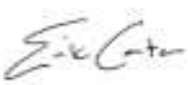
teacher or project staff. We are also asking teachers to let us know of any signs that your child might want to stop. As we publish or present findings from this study, the names of participating students, teachers, and schools will never be used. To minimize the risk that any information we gather could be connected back to individual participants, we store all data securely in our project offices and de-identify it using codes. This project has been approved by your child's high school; however, you and your child's participation are completely voluntary. If you or your child decide not to participate or to later withdraw from the study there will be no consequence. Your child can continue having a peer network even if you no longer want him/her to be involved in the research.

What If You Want More Information?
We encourage your questions about the research at any time by contacting Dr. Jennifer Asmus at (608) 262-3027 or asmus@wisc.edu. In addition, copies of any of the assessments used in this project are available for you to see. Questions about your rights as a research participant should be directed to the Education Research IRB (608) 262-9710 or edirb@education.wisc.edu.

Please return the attached form indicating whether you agree to participate in this project.

Sincerely,





Jennifer Asmus, Ph.D.
Professor of School Psychology

Erik Carter, Ph.D.
Associate Professor of Special Education

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Date IRB Approval Expires: 7/29/2014
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University of Wisconsin – Madison

Permission Form

Parent/Guardian Permission:

❑ Yes ❑ No I give permission for my child to participate in this research project.

❑ *Check this box if your child's cannot provide signed permission. We will verbally ask your child for his or her permission.*

Student Permission:

❑ Yes ❑ No I am willing to participate in this research project.

If you checked yes above, sign below to indicate that you have read the attached letters and voluntarily agree to participate.

_____	_____	_____
Parent/Guardian Name	Parent/Guardian Signature	Date
_____	_____	_____
Student Name	Student Signature	Date

Address: _____ Phone: _____

_____

_____ E-Mail: _____ (optional)

High School: _____ Teacher: _____

Please return this form in the envelope provided or to the following address. You may keep a copy of the letter.

Peer Partner Project (P3)
c/o Jennifer Asmus, Ph.D.
Waisman Center, Room A105
1500 Highland Ave
Madison WI 53705

Waisman Center
University of Wisconsin–Madison

1500 Highland Avenue • Waisman Center, Room A101 • Madison, WI 53705 • (608) 890-1687 telephone • (608) 265-3441 fax

Verbal Assent Script

I am from the University of Wisconsin. We want to learn how high school students work together in their classrooms and make friends. This is called a research study.

If you want to, one of your teachers will help you meet a new group of friends called "peer partners." You will get together with these peer partners every week or two. And you will also see and talk with them in the hallways, at lunch, or at other times at school. If there is a student who you want to be a peer partner, you can tell your teacher.

We will also sit in your classroom to watch about eight times this semester. We will ask your teacher about your learning goals and who you like to spend time with. And we will ask your parents about the things you do when you are not at school. Finally, we will ask you later how you liked being in the project.

We hope this project will help your teachers learn how to help you and other students make friends and learn more at school.

Your parent(s) said it is okay for you to do this. But, you do not have to have peer partners if you do not want to. And if you ever want to stop having peer partners, that is okay. Just tell a teacher or us. It will be no problem. You or your parents can contact Dr. Jennifer Asmus at (608) 262-3027 or asmus@wisc.edu with any questions.

Would you like to have peer partners? ☐ Yes ☐ No

Can we watch in your classroom? ☐ Yes ☐ No

Name of Student: _____

Assent obtained by (please print): _____

_____ _____

Signature Date

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University of Wisconsin – Madison

Waisman Center
University of Wisconsin–Madison

1500 Highland Avenue • Waisman Center, Room A101 • Madison, WI 53705 • (608) 890-1687 telephone • (608) 265-3441 fax

Dear Parent of _____:

We invite your child to participate in a research study looking at the benefits of peer network groups on high school students with and without disabilities. We hope to learn how the friendships and school involvement of students with autism or intellectual disabilities are improved when a peer group is developed. We are inviting students with disabilities, along with 3-6 of their schoolmates, to participate in this semester-long project. Your child is being invited because he/she was recommended by a teacher as someone who might enjoy and benefit from being part of a student's peer group.

What Are Peer Network Groups?
Peer network groups involve establishing a small group of peers who get to know and interact with a student with severe disabilities at various times during the week, such as between classes, at lunch, or before/after school. Your child—along with several schoolmates—would meet together with a teacher for a 45 minute orientation meeting to learn more about the student's interests and communication, and to arrange social contacts at different times throughout the week (e.g., between classes, at lunch, or before/after school). The peer group will meet together at school about every week or two during the semester to plan and talk about their interactions together, as well as to brainstorm ideas for enhancing the social participation of the student with disabilities. The meetings will last about 30 minutes and will be scheduled at a time and location determined by the group.

What Information Will We Collect?
We will collect information about the peer network group meetings from the adults who will be facilitating each group. In addition, we are asking you to:

- Allow the school to provide us a copy of your child's current class schedule, attendance record, and grades before and after the project. This information will only be seen by research staff for the purpose of learning about students' educational background and progress.
- Allow your child to tell us about their school and extracurricular involvement at the beginning and end of the semester, and tell us how he/she liked being part of this project at the end of the semester. These brief questionnaires will each take about 10 minutes to complete.

What Are the Benefits to You and Your Child?
In our past projects, students have reported personal growth and the development of new friendships from getting to know their schoolmates with disabilities. We hope similar benefits will come from this project.

Are There Any Risks?
As we publish or present findings from this study, the names of participating students, teachers, and schools will never be used. To minimize the risk that any information we gather could be connected back to individual participants, we store all data securely in our project offices and de-identify it using codes. This project has been approved by your child's high school; however, your child's participation is completely voluntary. If you decide not to have your child participate or want to later withdraw him/her from the study, it will have no negative effect on the educational services your child is receiving. Your child can continue being part of the peer group even if you no longer want him/her to be involved in the research.

What If I Want More Information?

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We encourage your questions about the research at any time by contacting Dr. Jennifer Asmus at (608) 262-3027 or asmus@wisc.edu. In addition, copies of any of the assessments used in this project are available for you to see by request. Questions about your rights as a research participant should be directed to the Education Research IRB (608) 262-9710 or edirb@education.wisc.edu.

Please return the attached form indicating whether you agree to participate in this project.

Sincerely,

Jennifer Asmus, Ph.D.
Professor of School Psychology

Erik Carter, Ph.D.
Associate Professor of Special Education

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Date IRB Approval Expires: 7/29/2014
FWA00005399 ED IRB
University of Wisconsin – Madison

Permission Form

Parent/Guardian Permission:

❑ Yes ❑ No I give permission for my child to participate in this research project.

Student Permission:

❑ Yes ❑ No I am willing to participate in this research project.

If you checked yes above, sign below to indicate that you have read the attached letters and voluntarily agree to participate.

Parent/Guardian Name	Parent/Guardian Signature	Date
Student Name	Student Signature	Date

Address: _____ Phone: _____

_____

_____ E-Mail: _____ (optional)

High School: _____ Teacher: _____

Please return this form in the envelope provided or to the following address. You may keep a copy of the letter.

Peer Partner Project (P3)
c/o Jennifer Asmus, Ph.D.
Waisman Center, Room A105
1500 Highland Ave
Madison WI 53705

Waisman Center
University of Wisconsin–Madison

1500 Highland Avenue • Waisman Center, Room A101 • Madison, WI 53705 • (608) 890-1607 telephone • (608) 265-3441 fax

Dear Student,

We are from the School of Education at the University of Wisconsin. We are doing a research study about how students with and without disabilities develop relationships in high schools. The purpose of this study is to look at how the friendships and school involvement of students with autism or intellectual disabilities are enhanced when a peer network group is formed.

If you choose to participate, you will be asked to be part of a peer network for one of your schoolmates with a disability. These groups will also involve 3-6 other students. You will meet with a teacher for an initial orientation that will last about 45 minutes. The group will then get together every week or two with the student for about 30 minutes to get to know each other, plan times to connect with each other throughout the week (such as between classes, at lunch, or before or after school), and share ideas for helping the student be more involved in the life of the school. The group will be led by a teacher who will help guide the group.

At the end of the semester, we will ask for your feedback on the project. We will also look at your grades and attendance before and after we begin, as well as ask you about your school and extracurricular involvement.

Hopefully, this study will help teachers learn how to help students develop new friendships and be more active in their school. In our past projects, students have told us that they enjoyed participating in this way. However, if you ever feel uncomfortable as a result of participating in this project, you may stop at any time. Your name will never be used when we talk or write about this study. Only the researchers will see the individual information collected in this project.

Your parent or guardian has said that it is okay for you to be in this project. You do not have to be in the study if you do not want to. If you want to stop, just tell your teacher or us. You may stop at any time without any problem. Even if you decide to stop being part of the research project, you are still welcome to continue being part of the group. If you have any questions now, or any time during the study, please contact Dr. Jennifer Asmus at (608) 262-3027 or asmus@wisc.edu.

If you agree to be in this study, please sign the bottom of this letter.

Sincerely,

Jennifer Asmus, Ph.D.
Professor of School Psychology

Erik Carter, Ph.D.
Associate Professor of Special Education

❑ Yes, I want to be in this study.

❑ No, I do not want to be in this study.

Name: _____

Signature: _____ Date: _____

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Waisman Center
University of Wisconsin–Madison

1500 Highland Avenue • Waisman Center, Room A101 • Madison, WI 53705 • (608) 890-1687 telephone • (608) 265-3441 fax

Dear Parent of _____:

We invite you and your child to participate in a research study looking at the social participation and learning of students with disabilities in high school. We want to learn how best to enhance the friendships and class participation of students with disabilities. We are focusing on students with cognitive disabilities or autism in this project. As a student at one of the participating high schools, your child was randomly selected to participate in this part of our project.

What Information Will We Collect?
We will observe your child and his/her classmates as they participate in typical classroom activities four times toward the *beginning* of the semester and four times toward the *end* of the semester. We will be focusing on how your child participates socially and academically in this class.

In addition, we would ask you to:

- Complete a questionnaire asking about your child's social relationships, his/her community activities, social and everyday skills, and support needs. We will ask for this information four different times: now, at the end of this semester, and at the beginning of each of the next two semesters. Each questionnaire will take about 45 minutes to finish and you can complete it by mail, telephone, or secure web survey.
- Allow teachers to provide us with their ratings of your child's social skills, everyday living skills, peer relationships, support needs, and educational progress in the classroom.
- Allow the school to provide us a copy of your child's current class schedule and IEP, as well as let us view his/her cumulative records to collect disability assessment, grades, and attendance information. This information will only be seen by research staff for the purpose of learning about students' educational background and progress.

You will receive a $ 20 gift card for *each* of the four surveys that you complete.

What Are the Benefits?
Although there are no direct benefits, we can share what we learn about your child's social needs back with his or her teachers which can be used to help them improve planning. Moreover, this project will help us to identify strategies for better supporting successful inclusion. We will share back what we learn about these strategies with you, your child's school, and other participating schools.

Are There Any Risks?
We do not anticipate any risks to your child. Should your child ever feel uncomfortable being part of this project, he/she may withdraw at any time by telling a teacher or project team member. As we publish or present findings from this study, the names of participating students, teachers, and schools will never be used. To minimize the risk that any information we gather could be connected back to individual participants, we store all data securely in our project offices and de-identify it using codes. This project has been approved by your child's high school; however, you and your child's participation are completely voluntary. There will be no consequences if you or your child decide not to participate or to later withdraw from the study.

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What If I Want More Information?
We encourage your questions about the research at any time by contacting Dr. Jennifer Asmus at (608) 262-3027 or asmus@wisc.edu. In addition, copies of any of the assessments used in this project are available for you to see by request. Questions about your rights as a research participant should be directed to the Education Research IRB (608) 262-9710 or edirb@education.wisc.edu.

Please return the attached form indicating whether you agree to participate in this project.

Sincerely,

Jennifer Asmus, Ph.D.
Professor of School Psychology

Erik Carter, Ph.D.
Associate Professor of Special Education

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Permission Form

Parent/Guardian Permission:

❑ Yes ❑ No I give permission for my child to participate in this research project.

❑ *Check this box if your child cannot provide signed permission. We will verbally ask your child for his or her permission.*

Student Permission:

❑ Yes ❑ No I am willing to participate in this research project.

If you checked yes above, sign below to indicate that you have read the attached letters and voluntarily agree to participate.

_____	_____	_____
Parent/Guardian Name	Parent/Guardian Signature	Date
_____	_____	_____
Student Name	Student Signature	Date

Address: _____ Phone: _____

_____

_____ E-Mail: _____ (optional)

High School: _____ Teacher: _____

Please return this form in the envelope provided or to the following address. You may keep a copy of the letter.

Peer Partner Project (P3)
c/o Jennifer Asmus, Ph.D.
Waisman Center, Room A105
1500 Highland Ave
Madison WI 53705

Waisman Center
University of Wisconsin–Madison

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Verbal Assent Script

I am from the University of Wisconsin. We want to learn how high school students work together in their classrooms and make friends. This is called a research study.

If you say it is okay, we will sit in your classroom to watch eight times this semester. We will also ask your teacher about your learning goals and who you like to spend time with. And we will ask your parents about the things you do when you are not at school. Finally, we will ask you later how you like your class.

We hope this project will help your teachers learn how to help students make new friends and learn more at school.

Your parent(s) said is okay for you to do this. But, you do not have to do this if you do not want to. And if you ever change your mind and want to stop, that is okay. Just tell a teacher or us. It will be no problem. You or your parents can contact Dr. Jennifer Asmus at (608) 262-3027 or asmus@wisc.edu with any questions.

Can we watch in your classroom? ❑ Yes ❑ No

Name of Student: _____

Assent obtained by (please print): _____

_____ _____

Signature Date

IRB Approval Date: 7/30/2013
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University of Wisconsin–Madison

1500 Highland Avenue • Waisman Center, Room A101 • Madison, WI 53705 • (608) 890-1687 telephone • (608) 265-3441 fax

Dear Classroom Teachers:

We invite you to participate in a research project focused on the social and academic participation of students with severe disabilities in high school. Specifically, we are looking at how two different peer-mediated strategies impact the social relationships and school involvement of students with cognitive disabilities or autism. More than 150 students with severe disabilities from numerous high schools —along with many more peers without disabilities—will eventually participate in our project. Some students with severe disabilities will receive support from peers in a classroom, some will receive support from peers outside of the classroom, and some will simply receive their usual supports. One of these randomly selected students is enrolled in your class (see permission form for the name of the student).

What Will My Participation Involve?
We ask for your permission to observe this student in your classroom four times near the *beginning* of the semester and four times near the *end* of the semester. These observations will focus on how this student with severe disabilities interacts with peers and any paraprofessionals or special educators who provide direct classroom support to him/her. These observations will be unobtrusive and scheduled on days that are agreeable to you. Your instruction is <u>not</u> the focus of the observations.

In addition, we would ask you to:

- Provide us with your ratings of the social status of the students from your classroom participating in this project. This will take you about 15 minutes at both the beginning and end of the semester. We will provide you with instructions on how to do this.
- Complete a short survey addressing your impressions of how the student's social and classroom participation may have changed over the semester, as well as your thoughts on the strategies used in the project. This will take less than 10 minutes to complete at the end of the semester.

You will receive a $10 gift card each of the two times you provide this information. Parents/guardians have already provided permission for their child with disabilities to participate in this project.

Are There Any Benefits to Me?
There are no direct benefits to you. Our project is designed to provide helpful information to teachers, administrators, and families about strategies for enhancing the social and class participation of students with disabilities in their schools. We will share back with you what we learn about these strategies.

Are There Any Risks?
As we publish or present findings from this study, the names of participating students, teachers, and schools will never be used. To minimize the risk that any information we gather could be connected back to individual participants, we store all data securely in our project offices and de-identify it using codes. The researchers will be the only ones who view this information and individual information will not be shared with administrators at the school. This project has been approved by your high school; however, your participation is completely voluntary. If you decide not to participate—or to later withdraw from the study—it will have no effect on your employment status at the school.

What If I Want More Information?

IRB Approval Date: 7/30/2013
Date IRB Approval Expires: 7/29/2014
FWA00005399 ED IRB
University of Wisconsin – Madison

We encourage your questions about the research at any time by contacting Dr. Jennifer Asmus at (608) 262-3027 or asmus@wisc.edu. In addition, copies of any of the assessments used in this project are available for you to see by request. Questions about your rights as a research participant should be directed to the Education Research IRB (608) 262-9710 or edirb@education.wisc.edu.

Please return the attached form indicating whether you agree to participate in this project.

Sincerely,

Jennifer Asmus, Ph.D.
Professor of School Psychology

Erik Carter, Ph.D.
Associate Professor of Special Education

IRB Approval Date: 7/30/2013
Date IRB Approval Expires: 7/29/2014
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Teacher Permission Form

Name: _____ School: _____

Participating Student(s) with Disabilities: _____

Role: *(Check all that apply)* ☐General Educator ☐Special Educator ☐Intervention facilitator ☐SEA

☐ **YES**, I agree to participate in this study.

☐ **NO**, I do not wish to participate in this study.

If you checked yes, sign below to indicate that you have read the attached consent letter and voluntarily agree to participate.

_____ _____

Signature *Date*

Address: _____ Phone: _____

_____

_____ E-Mail: _____ (optional)

Please return this form in the envelope provided or to the following address. You may keep a copy of the letter.

Peer Partner Project (P3)
c/o Jennifer Asmus, Ph.D.
Waisman Center, Room A105
1500 Highland Ave
Madison WI 53705

Waisman Center
University of Wisconsin–Madison

1500 Highland Avenue • Waisman Center, Room A101 • Madison, WI 53705 • (608) 890-1687 telephone • (608) 265-3441 fax

Dear Special Educators and Paraprofessionals:

We invite you to participate in a research project focused on the social and academic participation of students with severe disabilities in high school. Specifically, we are looking at how two different peer-mediated strategies impact the social relationships and school involvement of students with cognitive disabilities or autism. More than 150 students with severe disabilities from numerous high schools —along with many more peers without disabilities—will eventually participate in our project. Some students with severe disabilities will receive support from peers in a classroom, some will receive support from peers outside of the classroom, and some will simply receive their usual supports. One of your students has been randomly selected to participate in our project (see permission form for the name of the student).

What Will My Participation Involve?
We would ask you to complete an information packet to provide us with ratings of the student with disabilities' social skills, everyday living skills, peer relationships, support needs, and educational progress in the classroom during the beginning and the end of the semester. We will ask for a subset of this information again during each of the next two semesters.

Providing this written information will take about 60 minutes and you will receive a $25 stipend for completing an information packet at each of the four time points.

Are There Any Benefits to Me?
There are no direct benefits to you. Our project is designed to provide helpful information to teachers, administrators, and families about strategies for enhancing the social and class participation of students with disabilities in their schools. We will share back with you what we learn about these strategies.

Are There Any Risks?
As we publish or present findings from this study, the names of participating students, teachers, and schools will never be used. To minimize the risk that any information we gather could be connected back to individual participants, we store all data securely in our project offices and de-identify it using codes. The researchers will be the only ones who view this information and individual information will not be shared with administrators at the school. This project has been approved by your high school; however, your participation is completely voluntary. If you decide not to participate—or to later withdraw from the study—it will have no effect on your employment status with the school.

What If I Want More Information?
We encourage your questions about the research at any time by contacting Dr. Jennifer Asmus at (608) 262-3027 or asmus@wisc.edu. In addition, copies of any of the assessments used in this project are available for you to see by request. Questions about your rights as a research participant should be directed to the Education Research IRB (608) 262-9710 or edirb@education.wisc.edu.

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Erik Carter, Ph.D.
Associate Professor of Special Education

IRB Approval Date: 7/30/2013
Date IRB Approval Expires: 7/29/2014
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University of Wisconsin – Madison

Name of Student_____ Birthdate of Student_____

Permission Form

Parent/Guardian Permission:

☐ Yes ☐ No

- I give permission for my child to participate in the Peer Partner Project (P3) as described in the letter.
- I authorize P3 project staff from the Waisman Center, (1500 Highland Avenue, Madison, WI 53705) to obtain a copy from the school and/or district office of my student's: school record to obtain demographic information (age, grade, sex, race/ethnicity, disability status), current class schedule, IEP/re-evaluation assessment, and grades and attendance from the previous and current semesters

☐ *Check this box if your child cannot provide signed permission. We will verbally ask your child for his or her permission.*

Student Permission:

☐ Yes ☐ No

- I am willing to participate in the Peer Partner Project (P3) as described in the letter.
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If you checked yes above, sign below to indicate that you have read the attached letter and voluntarily agree to participate.

_____ _____ _____

Parent/Guardian Name Parent/Guardian Signature Date

_____ _____ _____

Student Name Student Signature Date

Address: _____ Phone: _____

_____

_____ E-Mail: _____ (optional)

High School: _____ Teacher: _____

NOTE: This permission will expire two years after its execution unless written notice to revoke is received prior thereto.

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