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Social Outcomes and Acceptability of Two Peer-Mediated Interventions for High School Students With Severe Disabilities: A Pilot Study

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Abstract

Adolescents with severe disabilities often have few opportunities to learn alongside and connect socially with peers without disabilities at their high school. In this pilot study, nine high school students with severe disabilities were randomly assigned to three conditions: peer support arrangements, peer network intervention, or a comparison condition involving "business-as-usual" paraprofessional support. School staff served as intervention facilitators and researchers coached and monitored fidelity. Increased classroom interactions were observed for students in the peer support condition and enhanced social contacts and friendships were found for students in both peer support and peer network conditions. Students, peers, and educators perceived both peer-mediated interventions as highly acceptable and feasible. Drawing upon these exploratory findings, we offer recommendations for research and practice focused on fostering strong social connections within high schools.

Key Words: *severe disabilities; high school; inclusion; peer-mediated interventions; social outcomes*

Supporting the participation of students with severe disabilities in inclusive social and academic experiences within schools has been a longstanding focus of research, policy, and legislative initiatives in the United States. Initial efforts to promote inclusive education focused most heavily on *where* students with severe disabilities spent their school day. Increasing the enrollment of students in neighborhood schools and general education classes were central goals of these early advocacy and systems change efforts (e.g., Hunt & Goetz, 1997). As a result of these efforts, the proportion of time students with intellectual and developmental disabilities (IDD) spend in general education settings has steadily increased over the past three decades (McLeskey, Landers, Williamson, & Hoppey, 2012). According to the U.S. Department of Education (2011), 44% of students with intellectual disability (ID), 57% of students with autism, and 29% of students with multiple disabilities now spend 40% or more of their school day in general education classrooms.

Over the past decade, however, emphasis has shifted toward further exploration of *how* to best support students with severe disabilities to participate meaningfully in the rich social and learning opportunities that exist within general education classrooms, clubs, cafeterias, and other inclusive school settings. The development of interventions to promote access to the general curriculum has comprised one important prong of these efforts (Ryndak, Jackson, & White, 2013). The evaluation of interventions for fostering peer relationships and social connections represents another thrust. Researchers have emphasized the necessity of identifying evidence-based approaches addressing both areas to ensure students with severe disabilities are not only *present* in inclusive settings, but also have the supports needed to *participate* in meaningful ways alongside their peers (Carter,

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Sisco, Chung, & Stanton-Chapman, 2010; Horner & Dunlap, 2012).

Despite much progress over the years, descriptive studies suggest many students with severe disabilities continue to have limited involvement in inclusive learning opportunities and few social connections with peers without disabilities, particularly in secondary schools (e.g., Bouck, 2012; Carter, Sisco, Brown, Brickham, & Al-Khabbaz, 2008). For example, 16% of adolescents with ID and 43% of adolescents with autism are reported by their parents to *never* see friends; almost one quarter of students with ID and half of students with autism have *not* been invited by friends to any social activity in the past year (Shattuck, Orsmond, Wagner, & Cooper, 2011). An increasingly challenging secondary curriculum, a complex peer culture during adolescence, and limited time spent in inclusive activities can all coalesce to make high school a particularly challenging time for adolescents with disabilities. Yet, relatively few interventions involving students with severe disabilities have been evaluated in high school settings (see reviews by Carter et al., 2010; Hughes et al., 2013). This paucity of research leaves secondary educators with few evidence-based approaches to draw upon to support inclusion.

This article presents exploratory findings from a project focused on identifying effective and socially valid interventions for improving the social and academic participation of high school students with severe disabilities. Although national data are not available, smaller scale studies suggest individually assigned paraprofessionals, special educators, or other specialized staff may be among the most prevalent approaches for supporting the inclusion of students with severe disabilities in secondary schools (e.g., Fisher & Pleasants, 2012; Giangreco, Suter, & Hurley, 2013). However, the exclusive reliance on individually assigned paraprofessionals has not been shown to be an effective practice. This heavy dependence on adult-delivered supports has raised a host of concerns about unintended consequences as well as spurred calls for the exploration of alternative models to support inclusive education (Giangreco, Doyle, & Suter, 2012). In response to these calls, we examined the promise and practicality of two peer-mediated interventions–peer support arrangements (delivered in the classroom) and peer network interventions (delivered outside the classroom)–as potential alternatives to an exclusive reliance on adult support models.

Peer support arrangements involve equipping and assisting one or more peers to provide academic and social support to a student with severe disabilities in an inclusive classroom (Carter, Cushing, & Kennedy, 2009). During an initial orientation session and throughout a semester, peers receive individualized guidance and feedback from paraprofessionals or special educators on how to support their classmate with a disability during various general education class activities (e.g., small-group projects, whole-group discussions, noninstructional activities). Three prior studies have examined the effect of peer support arrangements in high school classrooms (Carter, Cushing, Clark, & Kennedy, 2005; Carter, Sisco, Melekoglu, & Kurkowski, 2007; Carter, Moss, Hoffman, Chung, & Sisco, 2011). Although these studies documented increases in social interaction and maintenance of academic engagement for students with severe disabilities, none measured the extent to which these interventions also increased extended social contacts or if they led to new friendships.

Peer network interventions involve establishing a cohesive social group around a student with severe disabilities that meets formally and informally across a semester in inclusive settings (Carter et al., 2013; Haring & Breen, 1992). Three to six peers without severe disabilities–usually schoolmates who have interests or experiences in common with the focus student–attend an initial orientation meeting led by an adult facilitator. The network formally meets weekly in the cafeteria, during a club, as part of an advisory period, or at another agreed-upon time to participate in a shared activity and interact socially. Students also schedule time to connect informally during breaks between classes, before or after school, or during other school activities. These individualized interventions emphasize social connections and friendships outside of instructional time and throughout the school week. Although a number of studies have evaluated the efficacy of peer networks in elementary (e.g., Kamps, Potucek, Lopez, Kravits, & Kemmerer, 1997; Kamps et al., 2014; Koegel, Vernon, Koegel, Koegel, & Paullin, 2012) or middle schools (e.g., Haring & Breen, 1992), limited attention has focused on high school settings. Hochman, Carter, Bottema-Beutel, Harvey, and Gustafson (2015) evaluated cafeteria-based peer networks for four adolescents with autism and ID, whereas Gardner and colleagues (2014) examined the effect of these interventions

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within an advisory period for two adolescents with autism or ID. In both studies, the intervention led to substantial increases in peer interaction and social-related goal attainment.

Additional research is needed to address several gaps in this area of the literature. First, limited attention has focused on examining the effect of peer-mediated interventions within inclusive high school settings. Second, few studies have documented the effect of interventions on the social connections and friendships of adolescents with severe disabilities (cf., Carter et al., 2010). Although improvements in discrete social and communication behaviors represent important intervention foci, it is the extended social contacts and relationships emerging from these interactions that may contribute most to overall quality of life and enjoyment of school (Carter, Bottema-Beutel, & Brock, 2014). Third, the degree to which interventions are feasible to implement and acceptable to stakeholders will influence the degree to which they are adopted in schools. Additional research is needed to understand how educators and youth view key aspects of the goals, procedures, and outcomes of these intervention approaches.

Purpose and Research Questions

The purpose of this pilot study was to explore the effect and social validity of two peer-mediated interventions aimed at enhancing the social interactions and peer relationships of adolescents with severe disabilities. The two interventions emphasize different dimensions of the social lives and learning of these students. For peer support arrangements–which are delivered within the general education classroom–we were interested in social interactions and academic engagement relative to an exclusive reliance on paraprofessional support models within classrooms. However, we also wanted to know whether these interactions would lead to new social contacts and friendships among students without disabilities. For peer network interventions–which are delivered within inclusive settings during noninstructional times of the school day–we examined changes in social contacts and friendships beyond the classroom. The following research questions guided our inquiry:

1. How do peer support arrangements affect the classroom interactions, academic engagement, proximity, social contacts, and friendships of high school students with severe disabilities, relative to paraprofessional support models?
2. How do peer network interventions delivered in noninstructional contexts affect the social contacts and friendships of high school students with severe disabilities?
3. How do participating students, peers, paraprofessionals, and educators view the acceptability and feasibility of these two peer-mediated interventions?

Method

Participants

Participants were 9 adolescents with severe disabilities attending three high schools. Student demographics are displayed in Table 1. To be included in this pilot study, students must have (a) received special education services under the categories of intellectual disability and autism, (b) qualified for the state's alternate assessment, (c) been enrolled in at least one general education class, and (d) received paraprofessional or special educator support in general education courses. After receiving university and district research approvals, we worked with staff at each school to identify all students meeting these criteria, randomly assigned them to one of three conditions (i.e., peer support arrangements, peer network interventions, adult support only), and obtained consent/assent from students, peers, parents, and staff. We limited involvement in this pilot study to one student per condition at each of the high schools, accepting the first student to provide permission in each of the three conditions per school. One invited student did not provide consent, and so another student was invited in his place.

Twenty-six students without severe disabilities participated as peer partners within peer support arrangements ($n = 10$ students; 7 female) or peer network interventions ($n = 16$ students; 13 female). Ten of these students indicated they had prior experience with students with disabilities as a sibling, in specific school activities, or as part of a friendship. For peer support arrangements, peer partners were invited from within the same classroom by teachers who thought they would benefit from such involvement, would work well with the focus student, and had good social-related skills. For peer network interventions, peer partners were selected by adult facilitators on the

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Table 1
Participant Demographics and Observational Settings

Focus student, gender, race, age, school	Primary special education category, adaptive behavior composite	Social Skills Intervention System/ Autism severity	Inclusive classroom (student enrollment)	Peer partners
Peer support				
Leila, F, W, 17, A	ASD; VABS–II = 61	SISS = 67; CARS–2 = Severe	Ceramics (23)	3 F; 1 M
Elyse, F, W, 17, B	ID; VABS–II = 75	SISS = 99	Art (22)	3 F
Jonah, M, W, 17, C	ASD; VABS–II = 70	SISS = 72; CARS–2 = Minimal	Social studies (21)	1 F; 2 M
Peer network				
Riley, M, W, 15, A	ASD; VABS–II = 60	SISS = 72; CARS–2 = Severe	Art (20)	3 F; 2 M
Aaron, M, W, 20, B	ID; VABS–II = 64	SISS = 90	Music (15)	7 F
David, M, AA, 17, C	ASD; VABS–II = 63	SISS = 86; CARS–2 = Severe	Keyboarding (27)	3 F; 1 M
Comparison				
Connor, M, W, 17, A	ID; VABS–II = 69	SISS = 99	Culinary arts (10)	N/A
Joshua, M, W, 18, B	ID; VABS–II = 64	SISS = 87	Music (15)	N/A
Cara, F, W, 17, C	ID; VABS–II = 65	SISS = 96	Keyboarding (26)	N/A

Note. F = Female, M = Male; W = White, AA = African American. ID = Intellectual disability, ASD = Autism. N/A = Not applicable. SSIS = Social Skills Intervention System; CARS–2 = Childhood Autism Rating Scale–2, completed by research staff. VABS–II = Composite Vineland Adaptive Behavior Scales, Teacher Rating Form. School A, B, and C are included to indicate which students were from the same school.

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basis of common interests, availability, and/or prior interactions. For all interventions, input on peer selection was sought from the focus student. Of the 34 peers invited to participate, eight did not return permission forms or had scheduling conflicts. All peers were approached and invited after the pre-observations were completed.

Three paraprofessionals served as the facilitators for the peer support arrangements. One had a high school diploma and 9 years' experience, one had a bachelor's degree and 1.5 years' experience, and one had a bachelor's degree and 6 years' experience, as well as an elementary teaching certification. Two special educators and one speech/language pathologist intern at the schools served as peer network intervention facilitators. One special educator had a master's degree and 5 years' experience, and the other had a bachelor's degree and 14 years' experience. All adult facilitators were female; four were White and two reported multiple ethnicities (i.e., White and Native American, White and Asian American). None reported having prior experience implementing peer-mediated interventions.

Settings

Interventions took place at three high schools, in the same Midwest county, each of which served between 1,000 and 2,000 students. Across schools, student race/ethnicity ranged from 0.2% to 0.9% American Indian, 3% to 5% Asian American, 4% to 9% Black, 4% to 9% Hispanic, and 74% to 87% White. The percentage of students eligible for free/reduced-priced meals ranged from 13% to 25%. Two schools (School A and B) used a traditional schedule of 50-min class periods; one school used an alternating day block schedule of 100-min class periods (School C). Observations took place in a variety of courses (see Table 1); however, all were elective courses, with the exception of Joshua (peer support) who was observed in an academic class (social studies).

Measures

Observational Measures

For each focus student, we observed three full-length class periods toward the beginning of the semester (pre) and three full-length class periods toward the end of the semester (post; i.e., 54 total observations). Each set of three observations was collected over a 2 to 3 week period, lasting an average of 65 min (range, 38–104 min) of total observation time per time period. Total observation time per student averaged 405 min (range 297–664 min). We used tablet computers equipped with Lily Collector (Tapp, 2012) to collect frequency (i.e., initiations, responses) and durational (i.e., academic engagement, proximity, instructional format) data in real time. We selected these measures and definitions from previous observational research conducted in secondary classrooms (e.g., Carter et al., 2008; Carter et al., 2011). To address differences in class period durations leading to differences in total observation time at pre and post, we converted frequency counts to rates (per hour) and durational measures to percentages of total observation time across the three pre or three post observations.

Social interactions. We coded all social exchanges between the focus student and other classmates without disabilities as social interactions. Social interaction behaviors were defined as any verbal or nonverbal (e.g., facial expressions, gestures) behavior with clear communicative intent produced by the focus student to another student without severe disabilities (or vice versa). Each social interaction behavior was coded according to its function (i.e., initiation, response) and source (i.e., focus student, peer support, classmates without disabilities). Social interactions were coded as *initiations* if they were preceded by at least 5 s without an interaction or if they reflected a change in topic (e.g., task- to social-related topic); all other behaviors were coded as *responses*. The total number of *interactions* referred to the sum of all initiations and responses to and from the students with severe disabilities.

To descriptively characterize the focus student's interactions with peers (e.g., Carter, Hughes, et al., 2005), observers provided subjective ratings of the *reciprocity* of the interactions (i.e., *low, medium, high*), the *appropriateness of content* (i.e., in*appropriate, neutral, appropriate*), the *affect* of the focus student (i.e., *positive, neutral, negative*), and *response relevance* (i.e., *not related, somewhat related, mostly related*). After considering these four dimensions, we used them to rate the overall quality of the interaction between the peers and focus student (i.e., *low, medium-low, medium, medium-high, high*). Ratings were not made if no interactions occurred. In addition, observers recorded all of the communication modes used by the student during peer interactions (i.e., speech, gestures, vocalizations, signs, facial expressions, other) and every conversation topic dis-

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cussed (e.g., task-related topics, peers, jokes, school events, outside-school events, work/employment; Hughes et al., 1999). Operational definitions are available from the authors.

Academic engagement. We used durational measures to capture academic engagement. Focus students were coded as *engaged in consistent activities* if they were actively engaged in (i.e., attending to) instructional activities and/or tasks assigned by the teacher or the paraprofessional that were aligned with the content provided to the majority of the class. We coded *engaged in inconsistent activities* when focus students were attending to instructional activities or tasks assigned by school staff that were not aligned with this content. We considered students to be *unengaged* if they were not attending to given instructional activities, no instruction was provided, or they were not present in the classroom. In this pilot, students were never coded as *engaged in inconsistent activities*.

Proximity. We coded the duration of time focus students were in proximity (i.e., within 3 feet) to peer supports, other classmates, and adults to provide additional insights into peer support intervention fidelity and overall interaction opportunities.

Observation procedures. Three graduate students in the areas of school psychology and special education served as classroom observers. Observers read, discussed, and were required to score 100% on quizzes on coding definitions prior to observing. In addition, the observers practiced coding with videos and in vivo with practice observations in area high schools. Observers were required to meet (a) 90% agreement on practice videos, and (b) 80% agreement with a trained observer in classrooms before they could code independently. For more than one third (37.5%) of all observations–balanced across students and time points–a second observer simultaneously, but independently, collected data. We calculated point-by-point agreement for event-based codes using a 5-s window around the primary observer's data files. We determined total percentage of agreement by dividing the number of agreements by the number of agreements plus disagreements, and multiplying by 100%. We compared duration-based codes on a second-by-second basis and calculated agreement using the same formula. When both observers agreed on the nonoccurrence of interactions, we recorded full agreement on frequency codes for that class period. Mean percentage of total agreement for classroom variables were 82.6% (range, 0.0%–100%) for initiations by focus student, 88.9% (range, 50.0%–100%) for responses by focus student, 96.3% (range, 71.8%–100%) for initiations by peer partners, 95.2% (range, 59.3%–100%) for responses by peer partners, 97.1% (range, 50.0%–100%) for initiations by other classmates, 90.9% (range, 50.0%–100%) for responses by other classmates, 99.9% (range, 99.7%–100%) for academic engagement, 99.9% (range, 98.9%–100%) for proximity to peer partners, 99.3% (range, 96.1%–100%) for proximity to other classmates, and 98.7% (range, 98.7%–100%) for proximity to direct support personnel.

Social comparisons. To anchor our findings to typical social and academic experiences, we collected data on a randomly selected peer without severe disabilities enrolled in the same classroom. Using the same observational measures, we collected these social comparison data once at the beginning and once at the end of the semester in each classroom. One peer was chosen for the first half of the class and a different peer was observed for the second half; observations were combined to form a single class-length observation.

Social Contacts and Friendships

We collected data on the social contacts and friendships of focus students at the beginning (pre) and end (post) of the semester. We asked special educators to complete our *Social Connections and Relationships Assessment*–which we adapted from Kennedy and Itkonen (1996)–to capture relationships within and beyond the school day. We asked these respondents to list every social contact the focus student had during the prior two weeks. These assessments were distributed in person to teachers, who were asked to connect and talk with the focus student and other school staff to ensure the information was complete and accurate. A *social contact* was defined as an interaction lasting at least 15 min around a shared activity. For each contact, we asked (a) the first name of the peer, (b) the length of time the student had known the peer (i.e., less than or more than 1 month), (c) the perceived importance of the peer to the focus student (i.e., not very, somewhat, very important), (d) whether or not the peer also had a severe disability, and (e) whether or not the peer was considered a friend. In a separate section, we asked respondents to list other students with whom the focus student had not had a social contact in the prior two weeks–but were considered to be

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friends–along with items a through d above. We encouraged respondents to ask the focus student and other school staff who knew the student well to provide input when completing this measure. From these responses, we determined the number of different peers with and without disabilities considered to be friends of the focus student and/or with whom social contacts occurred, changes in each number over the semester, and new peers identified as social contacts and friends at the end of the semester (see Table 3).

Social Validity Measures

We asked stakeholders their views on the social validity of both peer-mediated interventions at the end of the semester using questionnaires containing Likert-type and open-ended items. Students with severe disabilities were asked questions about their peer-mediated group, friendships, and enjoyment of school (see Table 4 for items). Response options were yes, no, and I don't know; special educators read questions to students, elaborating and recording answers as needed. The facilitator survey included 20 statements addressing the amount of time and support required to implement the intervention, their interest and motivation to implement the intervention, and their perceptions of benefits for participating students, all rated on a 5-point, Likert-type scale (1 = strongly disagree, 5 = strongly agree; see Table 5 for items). Five open-ended questions addressed what went well, what could have been better, what (if anything) changed for the focus student as a result of being in the project, what (if anything) changed for peers as a result of being in the project, and what (if anything) changed for the facilitator as a result of being in the project. Peers partners completed a similar survey (see Table 5 for items) that also asked if they would recommend participation to other students and if the school should have more peer networks/peer supports in the future. Four open-ended questions addressed the same first four questions asked of facilitators. The general educator survey, completed only when peer support arrangements were established, included questions similar to the facilitator survey.

Research Design and Study Conditions

Within each school, we randomly assigned students to participate in one of two peer-mediated interventions (i.e., peer support arrangements, peer network interventions) or to participate in a comparison condition involving "business as usual" supports (i.e., individually assigned adult support). This was done to counterbalance experimental conditions across schools. During pre-data collection, none of the nine enrolled students were participating in any peer-mediated interventions and all received paraprofessional support in general education classrooms.

Peer Support Condition

A peer support arrangement was established for three students in one of their general education classes. These interventions involved three or four peers who provided academic and/or social support to their classmate with severe disabilities under the guidance of a paraprofessional (see Carter et al., 2011). The facilitator worked with the general educator to select and invite peers to provide these supports. Input from the focus students was also sought by the facilitator after observing with whom the students already interacted with and asking the students if they had peers they would like to have participate and get to know better. An initial peer support orientation meeting was held, lasting up to 60 min, and included the facilitator, the students serving as peer supports, and a project coach. This meeting covered a structured set of topics (e.g., rationale for peer-mediated supports, background about the student, review of the written plan, discussion of class expectations and supports). Although the meeting was led by the school facilitator using a written outline, a project coach was present to add omitted information and/or to answer questions regarding the research portion of the study. After the orientation session, students moved seats to be in proximity to one another, usually the next time the class met. Peers supported students academically (e.g., encouraging contributions to class and group discussion, highlighting key concepts, sharing materials, collaborating on assignments, providing feedback on work) and socially (e.g., conversing about school and other activities, modeling appropriate social skills, reinforcing communication attempts, making introductions to other classmates) as outlined on a written peer support plan. Paraprofessionals modeled support strategies and provided feedback as students initially began working together. As students gained experience with one another, the facilitator faded back direct support while providing ongoing guidance and feedback to students as they worked

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together. Peer support arrangements began toward the middle of the semester and occurred throughout the remainder of the semester, lasting on average 10 weeks (*range,* 10–11 weeks). We hypothesized these interventions would increase social interactions, academic engagement, social contacts, and reported friendships.

Peer Network Intervention Condition

Peer network interventions involved establishing structured social groups (i.e., three or more peers without disabilities) around the focus student that met weekly outside of class, such as during lunch or after school (see Carter et al., 2013; Hochman et al., 2015). They differ from peer support arrangements in that they involve larger numbers of peers from across the school, take place during noninstructional times of the school day, and do not focus on peer-delivered academic support. Each adult facilitator invited peers on the basis of common interests, availability, and prior interactions. Input from focus students was sought by observing the student's interactions with peers and asking for suggestions. An initial 45-min orientation and organizational network meeting–led by the facilitator, but also attended by a project coach–was held with peers to review the purpose of the group, share general information about the focus student (e.g., strengths, interests, communication style), and to establish a regular meeting time/location. During weekly network meetings, students (a) participated in a shared activity (e.g., eating lunch, playing a game), (b) discussed times to connect with one another socially throughout the week (e.g., between classes, before/after school, during breaks or lunch), and (c) exchanged ideas for involving the focus student more fully in the life of the school by discussing connections during the prior week. This process was adapted from middle school peer networks described by Haring and Breen (1992). Network meetings began toward the middle of the semester and occurred weekly until the final weeks of the semester, lasting on average 8.5 weeks (*range,* 8–10 weeks). We hypothesized peer networks would increase social contacts and reported friendships, but anticipated no changes on classroom measures as peer network members were not enrolled in the same course and the network met outside of the classroom.

Comparison Condition

The comparison condition involved students receiving their usual special education services as indicated in their individualized educational programs. No new peer-mediated interventions were introduced to these three students and none were observed independent of involvement in this project. Within general education classrooms, these students received individually assigned support from a paraprofessional while participating in class activities.

Treatment Fidelity

All facilitators participated in an initial 3-hr workshop on establishing their assigned peer-mediated intervention (materials available by request). This didactic training included oral instruction, structured presentation slides and handouts, and guided discussion to ensure 100% coverage of specified content. Each facilitator also received an intervention manual containing all needed forms and documents (e.g., scripts for recruiting peers, example peer support plans, fidelity forms for network meetings and peer support arrangements). For peer support facilitators, a separate, additional 1-hr meeting was held with a project coach to craft a written peer support plan detailing the roles peers and the paraprofessional would each play in promoting learning and social interaction in the class, as well as how the student with disabilities would participate in class activities. This plan was approved by the general education teacher and added to by the peers. A written checklist was used to document coverage of all specified topics during the peer support (9 items) and peer network (7 items) intervention orientation meetings with peers. All peers participated in an orientation session and 100% of topics were covered.

We also developed fidelity checklists for both peer support and peer network interventions. These checklists were completed weekly by the facilitator as a self-monitoring tool and at least three times by a project coach during classroom observations or attendance at network meetings. The peer network intervention meetings included the following elements: (a) social time and/or activity; (b) discussion of interactions during previous week; (c) scheduling interactions for next week; (d) informal assessment of group satisfaction; (e) group discussion on topic of choice (if desired); (f) conversation about extending the peer

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network intervention outside of school; and (g) reminders of the next meeting and scheduling social contacts for the next week. Facilitators also collected information on the extent to which peers had interacted with the focus student outside of the meeting during the previous week. Peer support arrangements included the following elements: (a) peers were seated next to the focus student; (b) peers were interacting with one another during class (e.g., greeting the student, including student in conversations with peers); (c) peers were assisting the student academically (e.g., supporting participation in activities, restating questions and instructions, appropriately prompting the student, sharing materials); and (d) facilitators were providing needed support to students as they worked together (e.g., providing feedback, delivering praise, using social facilitation strategies). As the types of support focus students needed in each classroom was individualized, the avenues through which these elements were met intentionally varied from one student and class period to the next. Therefore, observers also documented the specific academic and social support behaviors used by peers and paraprofessionals in all general education classrooms in which we observed.

Data Analysis

We used descriptive statistics (e.g., means, ranges, standard deviations) to summarize all measures across individual students, study conditions, and time points. Given our small sample size and exploratory purpose, inferential statistics are inappropriate for quantifying the magnitude of changes over time (pre to post) and between conditions. Therefore, we present data for individual students to enable review of data patterns across students and time periods. We present all three pre and all three post observations individually as well as collapsed into a single data point by summing all data and dividing by total observation time. We also include social comparison observational data for peers without disabilities enrolled in the same classrooms. We hypothesized students participating in peer support arrangements would substantially increase their interactions with peers within classrooms (i.e., initiations and responses to/from students without severe disabilities), maintain or increase their academic engagement, and decrease their proximity to paraprofessionals; no changes in classroom behavior were anticipated for students in the peer network intervention or comparison conditions as no new interventions were introduced in classroom settings for these students. Further, we anticipated students participating in both peer-mediated interventions would have substantial increases in social contacts and friendships at the end of the semester, while changes for students receiving only adult support would be minimal.

Results

Social Interactions

During pre-observations, social interactions with classmates were infrequent across all students in all conditions. The average rate of interactions per hour with any classmate across all three groups was 10.4 (range, 0–38.8), with slightly higher rates for students in the peer support condition (see Table 2 for summaries by individual and group). For peers without disabilities in these same classrooms, the interaction rate per hour averaged 189.1 (SD = 160.6; range, 12.0–501.4). During post observations, this rate increased by an average of 151.4 interactions per hour for students participating in peer support arrangements to 170.5 per hour (from 18.1 to 266.6 for Elyse, 38.8 to 107.1 for Jonah, 0.4 to 137.7 for Leila). Slightly more than half of interactions occurred with peer supports, and conversations were fairly reciprocal, with slightly more contributions from peers than the focus student. In contrast, social interactions for students participating in peer network interventions and the comparison condition only increased by an average of 0.9 interactions per hour (from 5.6 to 7.6 for Aaron, 0.6 to 0 for David, 0 to 1.2 for Riley) and 17.2 interactions per hour (from 9.4 to 20.2 for Joshua, 3.8 to 4.2 for Cara, 17.2 to 57.4 for Connor), respectively. For peers without disabilities in these same classrooms, the interaction rate per hour averaged 187.7 (SD = 87.7; range, 68.0–374.8). Increases in conversational initiations were modest but higher for students receiving peer support (gain of 5.6/hr) relative to students in the peer network intervention (gain of 0.4/hr) and comparison (gain of 3.4/hr) conditions. For peers without disabilities, the initiation rate per hour at the end of the semester averaged 17.4 (SD = 8.5; range, 6.0–34.5).

Descriptively, the three students participating in peer support arrangements were observed using multiple modes of communication during peer interactions, including speech for all three students, gestures for all three students, facial expressions for all three students, and vocaliza-

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Table 2
Observational Data at the Beginning of the Semester and Changes at the End of the Semester

		Peer support				Peer network				Comparison			
Measure	Time	Elyse	Jonah	Leila	**All**	Aaron	David	Riley	**All**	Joshua	Cara	Connor	**All**
Engaged consistent[1]	Pre	90.4	80.4	89.3	**86.7**	99.7	76.8	91.8	**89.4**	79.4	75.9	92.8	**82.7**
	Change	−0.7	+15.2	+8.4	**+7.7**	−8.2	+3.0	−21.7	**–9.0**	+17.2	+5.3	−24.5	**−0.6**
Proximity to peer partner[1]	Pre	0	0	0	**0**	–	–	–	–	–	–	–	–
	Change	+40.7	+98.6	+63.0	**+67.4**	–	–	–	–	–	–	–	–
Proximity to other classmates[1,3]	Pre	93.3	94.7	42.7	**76.9**	85.8	71.3	1.4	**52.8**	69.6	69.9	92.5	**77.3**
	Change	−35.3	−74.6	+32.8	**–25.7**	−25.4	+6.6	+−0.1	**–6.3**	−27.0	−69.9	−14.8	**–37.2**
Proximity to adult support[1]	Pre	91.4	0.6	79.2	**57.1**	48.5	72.2	68.8	**63.2**	24.6	72.3	82.5	**59.8**
	Change	−60.8	+2.3	−22.6	**–27.1**	−20.5	−10.9	−24.5	**–18.6**	+10.9	−43.6	−8.0	**–13.6**
Interactions with *any* classmates[2]	Pre	18.1	38.8	0.4	**19.1**	5.6	0.6	0	**2.1**	9.4	3.8	17.2	**10.1**
	Change	+248.5	+68.3	+137.3	**+151.4**	+2.0	−0.6	+1.2	**+0.9**	+10.8	+0.4	+40.3	**+17.2**
Interactions *only* with peer partners[2]	Pre	0	0	0	**0**	–	–	–	–	–	–	–	–
	Change	+124.9	+55.5	+75.9	**+85.4**	–	–	–	–	–	–	–	–
Initiations by focus student[2]	Pre	6.0	1.7	0	**2.6**	0.4	0	0	**0.1**	4.5	2.2	5.5	**4.0**
	Change	+10.8	+4.9	+1.1	**+5.6**	+1.2	0	0	**+0.4**	−3.7	+1.0	+13.0	**+3.4**
Responses by focus student[2]	Pre	4.8	16.6	0	**7.1**	2.0	0.2	0	**0.7**	0.8	0.7	3.8	**1.8**
	Change	+115.3	+27.1	+60.6	**+67.7**	0	−0.2	+0.4	**+0.1**	+8.3	+0.1	+10.2	**+6.2**

Note. Unengaged is the difference between the engaged–consistent data and 100% and is thus not reported on the table. **All** refers to the average of all students in that condition. "–" indicates no peer partners were established in the classroom. [1]Percentage of class time. [2]Rate per hour.[3]Other classmates refers to students *not* serving as peer partners.

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Table 3
School-Reported Social Contacts and Friendships Gained Over the Semester by Student and Condition

		Peer support			Peer network			Peer comparison		
Measure	Time	Elyse	Jonah	Leila	Aaron	David	Riley	Joshua	Cara	Connor
Social contacts										
Peers without disabilities	Pre	1	3	0	1	0	0	3	0	0
	Gains	+3	+1	+4	+7	+4	+5	+0	+1	+2
Peers with disabilities	Pre	7	0	0	4	6	3	0	9	2
	Gains	+0	+0	+2	+0	+3	+0	+4	+0	+1
Friendships										
Peers without disabilities	Pre	2	3	0	4	0	0	3	1	0
	Gains	+3	+1	+4	+7	+4	+3	+3	+0	+2
Peers with disabilities	Pre	7	0	0	4	6	3	5	9	2
	Gains	+1	+0	+0	+1	+1	+0	+0	+0	+1

Note. Gained refers to the number of new peers identified as social contacts or friends at the end of the semester.

tions for two of three students. Reciprocity was rated as high for two students and medium for one student; content was rated as appropriate for all three students; affect was rated as positive for two students and neutral for one student; and overall quality was judged to be high for two students and medium high for one student. Every post-observation across all three students included task-related conversations (nine of nine observations); the other most common topics included greetings (six of nine observations), jokes (three of nine observations), peers (two of nine observations), social school events (two of nine observations), after-school events (one of

Table 4
Perspectives of Students With Severe Disabilities on Peer-Mediated Interventions

Social validity items	Yes	No	Unsure	Unclear
Students involved in peer networks ($n = 3$)				
Do you like going to school?	3	0	0	0
Do you have friends at school?	3	0	0	0
Did you like spending time with [names] in school?	3	0	0	0
Did spending time with [names] help you learn new things?	3	0	0	0
Are [names] your friends?	3	0	0	0
Would you like to keep hanging out with [names]?	2	0	1	0
Students involved in peer support arrangements ($n = 3$)				
Do you like going to school?	2	1	0	0
Do you have friends at school?	3	0	0	0
Do you like this class?	2	0	1	0
Did you learn new things in this class?	2	0	1	0
Did you like working with [names] in this class?	3	0	0	0
Did working with [names] help you learn new things?	3	0	0	0
Are [names] your friends?	3	0	0	0
Would you like to keep working with [names]?	3	0	0	0

Note. Actual names of peer partners were inserted where noted by [names]. Numbers in final four columns refer to how many students provided each response. Unclear meant the adult was unable to discern the focus student's view. Unsure meant the student was unsure of their view.

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Table 5
Peer and Facilitator Perspectives on Social Validity

	Facilitators		Peer partners	
	Peer support	Peer networks	Peer support	Peer networks
Common questions: Facilitator wording [Peer wording]				
I feel I was effective in this role.	3.7 (0.6)	4.3 (0.5)	4.0 (0.8)	4.2 (0.7)
I am not interested in implementing this strategy again. [I would be a peer partner again in the future.]	2.0 (1.0)	2.0 (1.4)	4.5 (0.7)	4.8 (0.4)
The student with a disability [My partner] benefited socially from having peer partners.	4.3 (1.2)	4.8 (0.5)	4.0 (0.9)	4.1 (0.8)
The peers without disabilities [I] benefited socially from being a peer partner.	4.0 (1.0)	4.3 (0.5)	4.7 (1.8)	4.0 (0.7)
The student with a disability [My partner] benefited academically from having peer partners.	3.7 (1.2)	3.0 (0.9)	4.0 (0.7)	3.3 (0.6)
The peers without ASD [I] benefited academically from being a peer partner.	3.0 (0.0)	2.8 (0.5)	3.3 (1.2)	3.2 (0.7)
Overall, I enjoyed participating in this project.	4.3 (0.6)	4.8 (0.5)	4.6 (0.7)	4.7 (0.5)
Facilitator-specific questions				
The amount of time required to use this strategy was reasonable.	4.0 (1.0)	4.5 (0.6)	–	–
The amount of time required for record keeping with this strategy was reasonable.	4.3 (0.6)	4.0 (0.0)	–	–
I would need ongoing consultation to keep implementing this strategy.	3.0 (0.0)	2.8 (1.3)	–	–
Implementation of this strategy required considerable support from other school staff.	3.7 (0.6)	2.3 (0.5)	–	–
I implemented this strategy with a good deal of enthusiasm.	4.0 (0.0)	4.5 (0.6)	–	–
I am motivated to continue using this strategy.	4.0 (1.0)	4.5 (0.6)	–	–
This strategy was a good way to address the educational needs of the student with a disability.	4.7 (0.6)	4.0 (0.8)	–	–
This strategy fits well within this school.	3.3 (1.2)	4.3 (1.0)	–	–
I understood the procedures of this strategy.	4.3 (0.6)	4.8 (0.5)	–	–
I would know what to do if I was asked to implement this strategy again.	4.3 (0.6)	4.8 (0.5)	–	–
The student with a disability has more friends as a result of this project.	4.0 (1.0)	4.3 (0.5)	–	–
This strategy negatively impacted other students in the class/ school.	1.3 (0.6)	1.0 (0.0)	–	–
I could use the strategies I learned through this project with other students.	4.0 (0.0)	5.0 (0.0)	–	–
Peer–specific questions				
At first, I was excited to become a peer group member.	–	–	4.2 (1.0)	4.8 (0.6)
I felt confident serving in this role.	–	–	4.1 (0.6)	4.1 (1.0)
I feel I was effective in this role.	–	–	4.0 (0.8)	4.2 (0.7)

(Table 5 continued)

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Table 5
Continued

	Facilitators		Peer partners	
	Peer support	Peer networks	Peer support	Peer networks
I had enough help from a teacher or teaching assistant to do this role well.	–	–	4.3 (0.9)	4.5 (0.5)
This was way too much work for me.	–	–	1.6 (0.7)	1.7 (1.3)
It was easy to get my own work done while part of this project.	–	–	3.9 (0.9)	4.6 (0.7)
The initial orientation meeting with a teacher/paraprofessional was helpful.	–	–	4.1 (0.9)	4.3 (0.9)
Other students in the school should also do this.	–	–	4.6 (0.7)	4.8 (0.4)
I understand why the teachers thought peer partners would be helpful for my partner with a disability.	–	–	4.7 (0.5)	4.6 (0.5)
Our school should have more peer partners for students with disabilities.	–	–	4.8 (0.4)	4.6 (0.5)
I consider my partner to be a friend.	–	–	4.4 (0.5)	4.4 (0.9)
I would recommend being a peer partner to my other friends.	–	–	4.9 (1.5)	4.9 (0.3)
My views about students with disabilities have changed for the better.	–	–	4.1 (0.7)	4.2 (0.8)
I also spend time with other students who have similar disabilities at my school.	–	–	4.6 (0.7)	4.7 (0.5)

Note. ASD = autism spectrum disorder. Numbers reflect means (standard deviations) on a 5-point scale ranging from strongly disagree (1) to strongly agree (5). Peers in networks and support arrangements are called "peer partners" on this table. "–" indicates the question was not asked of that stakeholder.

nine observations), academic school events (one of nine observations), and other topics (e.g., weather, videogames).

Academic Engagement

During pre-observations, the percentage of intervals during which students were academically engaged-consistent was fairly high, averaging 86.3% (range, 75.9%–99.7%) across students and conditions (see Table 2). For peers without disabilities in these same classrooms, engagement averaged 92.5% (*SD* = 14.3%; range, 59.8%–100%). At the end of the semester, students participating in peer support arrangements had an average increase of 7.7% to 94.3% (from 90.4% to 89.7% for Elyse, 80.4% to 95.6% for Jonah, 89.3% to 97.7% for Leila). Overall, academic engagement maintained (decreasing just 0.6%) for students in the comparison condition (from 79.4% to 96.6% for Joshua, 75.9% to 81.2% for Cara, 92.8% to 68.3% for Connor) and decreased an average of 9.0% for students in the peer network condition (from 99.7% to 91.5% for Aaron, 76.8% to 79.8% for David, 91.8% to 70.1% for Riley). For peers without disabilities in these same classrooms, engagement toward the end of the semester averaged 90.8% (*SD* = 19.1%; range, 40.9%–100%). However, it is important to note considerable individual differences across students within and across conditions (see Table 2). For example, for students in the peer network condition, Elise maintained her levels of engagement, whereas Johan and Leila increased their engagement when working with peers.

Proximity

At post-observations, students in the peer support condition were in proximity to their peer partners an average of 67.4% of the class period (range, 40.7%–98.6%). Overall, adult proximity decreased 27.1% for students in peer support arrangements (from 91.4% to 30.6% for Elyse, 0.6% to 2.9% for Jonah, 79.2% to 56.6% for Leila), 18.6% for students in the peer network condition (from

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48.5% to 28.0% for Aaron, 72.2% to 61.3% for David, 68.8% to 44.3% for Riley), and 13.6% for students in the comparison condition (from 24.6% to 35.5% for Joshua, 72.3% to 28.7% for Cara, 82.5% to 74.5% for Connor). Overall, two of three students in the peer supports and comparison conditions and all students in the peer network condition decreased proximity to adult supports. These findings suggest proximity may naturally decrease over time, but does so in more pronounced ways when students have peer supports. The social comparison group of peers without disabilities were never observed in close proximity to adults and were in proximity to other peers 85.0% ($SD = 32.3\%$; range, 46.9%–100%) of the class.

Social Contacts

Toward the beginning of the semester, students across conditions were reported by school staff to have an average of 3.4 (range, 0 to 9) social contacts with peers with severe disabilities during the prior two weeks and an average of 0.9 (range, 0 to 3) social contacts with peers without disabilities (see Table 3 for gains in social contacts by student and condition). We defined gains in social contacts as having contact with peers at the end of the semester who were not identified as being part of a contact at the beginning of the semester. Although students in the comparison condition gained an average of 1.7 social sontacts (0 for Joshua, 1 for Cara, 2 for Connor) new peers without disabilities with whom they had a social contact toward the end of the semester, gains averaged 2.7 (3 for Elyse, 1 for Jonah, 4 for Leila) for students in peer support arrangements and 5.3 (7 for Aaron, 4 for David, 5 for Riley) for students in the peer network condition.

Friendships

Toward the beginning of the semester, students across conditions were reported to have an average of 4.0 (range, 0 to 9) friendships with peers with severe disabilities and an average of 1.4 (range, 0 to 4) friendships with peers without disabilities (see Table 3 for gains in friendship by student and condition). Gains were defined in a similar way as friendships. Students in the comparison group gained an average of 1.7 friends without disabilities by the end of the semester (3 for Joshua, 0 for Cara, 2 for Connor). Gains averaged 2.7 for students participating in peer support arrangements (3 for Elyse, 1 for Jonah, 4 for Leila) and averaged 4.7 for students participating in the peer network condition (7 for Aaron, 4 for David, 3 for Riley).

Social Validity

Social validity data are displayed in Tables 4 and 5. The majority of students for whom the peer-mediated interventions were established indicated they enjoyed going to school, had friends, and liked spending time with their peer partners. Moreover, most students reported that they considered the peers friends and wanted to continue spending time with them. Overall, peers in the peer support and peer network conditions reported they were effective in their roles, wanted to be part of future peer-mediated efforts, and enjoyed participating in the project. Facilitators' ratings suggested the amount of time required to use the strategy was reasonable, they understood the procedures, they could use the strategy with other students, and other students at the school were not negatively affected. They also said the focus student benefited from having peer partners (socially for both interventions, academically only for the peer support arrangements) and gained new friendships. Peers said both they and the focus students benefited from being a part of a peer group, all felt confident in their role, and they felt they had enough help from the facilitator to do their role well. General educators were generally positive about peer support interventions in their classrooms, noting the amount of time required was reasonable and the strategy fit well within their classroom.

Discussion

Enhancing the social participation and peer relationships of students with severe disabilities in inclusive schools has been a longstanding focus of research, advocacy, and practice. Yet, there remains a paucity of studies focused on the social-related outcomes of adolescents with and without disabilities in high school settings. In this exploratory pilot study, we examined the effect and acceptability of two peer-mediated intervention approaches as an alternative to an exclusive reliance on adult-delivered supports. Our findings highlight some key considerations and complexities associated with implementing peer-mediated interventions in high schools.

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First, students receiving supports from peers in inclusive classrooms showed substantial increases in social interactions toward the end of the semester relative to students who worked primarily alongside paraprofessionals. Specifically, end-of-semester observations indicated students with peer supports had an increase of 151 initiations/responses per hour relative to students for whom no new interventions were introduced in their classroom (i.e., increase of 17/hr for students in comparison condition and 0.9/hr for students in the peer network condition). Individually each student in the peer support condition increased social interactions from between 65 to 248 times per hour from pre to post observation time periods. Although responses were far more common than initiations, the contributions to these interactions were fairly balanced across students with and without disabilities. It is particularly intriguing that a large proportion of these new interactions took place with classmates who were not directly involved as peer supports. This outcome may be explained by a variety of potential mediating factors. For example, it may be that peer partners are drawing other classmates into conversation; that reducing the close proximity of paraprofessionals enables more students to interact; that increases in proximity to classmates increases interaction opportunities; or that paraprofessionals did indeed adopt a more facilitative role. Similarly, academic engagement maintained or increased for all students receiving peer support arrangements, suggesting that peer-mediated supports do not negatively affect classroom engagement and may actually facilitate greater class participation and learning.

Second, both peer support and peer network interventions led to increased social contacts and more friendships over the course of one semester. These new connections–primarily involving peers without severe disabilities–extended beyond the gains reported for students in the comparison condition for whom no additional social-focused interventions were introduced. These findings reinforce the importance of undertaking intentional efforts to create shared learning and social opportunities for students with and without disabilities that set the occasion for new relationships to emerge (Carter et al., 2014; Rosetti, 2011). Whereas gains in social contacts can be attributed in part to participation in the intervention (i.e., a recent peer network intervention meeting might have constituted some of the social contacts), it is the emergence of new friendships we found most intriguing. Additional research is needed to explore more fully the quality and durability of the friendships that emerge from these educational support models.

Although there are considerable challenges in documenting the social affiliations of adolescents and real limitations to relying on special educators as a key source of information on this dimension of students' lives, we hold some confidence in the social portrait emerging in this study. While the "invisible hand" of adults in the peer experiences of children with high-incidence disabilities has been suggested elsewhere (Farmer, Lines, & Hamm, 2011), students in our study had extensive support needs and were almost always in the presence of special education staff. Extended interactions of 15 min or more would unlikely go unnoticed. We also asked special educators to solicit input from the focus students when completing this measure, as well as to speak with other staff (e.g., paraprofessionals, related service providers) for input. Moreover, we found that both students with disabilities and peer partners independently characterized one another as friends when asked on end-of-semester questionnaires. Yet the friendship construct is still subjective. Efforts are also needed to strengthen existing methods for documenting the social affiliations of students with complex communication challenges who often cannot be the sole informant on their social experiences. For example, sociometric and mapping approaches hold promise for capturing relationships within particular classrooms (Fisher, Shogren, & Halle, 2013; Mu, Siegel, & Allinder, 2000). However, additional research is needed to identify ways of ensuring the perspective of young people with severe disabilities is more prominent–indeed preeminent–in efforts to characterize the quality and scope of peer relationships. Additional innovations are needed to capture connections and friendships that extended beyond these classroom boundaries and outside of the school day.

Third, both fidelity and social validity data suggest these interventions are fairly feasible to implement within and beyond the classroom. Previous studies of peer support interventions (Carter et al., 2005; Carter et al., 2007) and peer network interventions (Haring & Breen, 1992) extensively involved university staff as interventionists. A novel feature of the current study was that school personnel (three paraprofessionals, two special educators, and a speech-language patholo-

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gist intern) assumed primary responsibility for implementing each intervention while receiving initial training and coaching (but limited direct assistance) from research project staff. The field has long expressed concern about a disconnect between what is recommended in the literature and what is doable within the classroom (Snell, 2003). This study affirmed that educators and paraprofessionals can successfully implement peer-mediated interventions for the first time after receiving only a modest amount of training and feedback. However, additional attention should be directed toward exploring facilitator-related factors that might influence the quality of intervention implementation over time. For example, the educational priorities, previous training, job responsibilities, and personal commitment to inclusion of potential facilitators could shape their interest and investment in these interventions, and thus the manner in which intervention training and support is provided. Although all six facilitators in this study received the same level of training, future research is needed to determine how best to differentiate that training for educational staff with different backgrounds, experiences, knowledge, and commitments.

Fourth, participating students viewed these interventions favorably. Within high schools, the perceptions of adolescents may be especially important to consider when striving to develop effective interventions (Copeland et al., 2004; Rosetti, 2011). This is particularly true when focusing on social-related outcomes. Most of the peers initially invited to participate as peer partners opted to do so and all who agreed maintained their involvement throughout the semester. When asked about their participation at the end of the semester, peer partners reported feeling confident and effective in their roles, recommended other peers adopt similar roles, and felt their views about their classmates with disabilities had changed in positive ways. Participating students with severe disabilities also affirmed the value of these interventions. Five of the six students wanted to continue spending time with their peer partners (one was unsure) and all indicated they learned new things.

We did observe that a larger proportion of peer partners were female relative to the number of focus students with severe disabilities who were male. Such patterns are fairly consistent within the constellation of peer-mediated interventions involving students with IDD (Carter et al., 2010; Hughes et al., 2013). We wonder whether the elevated involvement of females primarily reflects the preferences of the adults who do the inviting (most of whom are female themselves; Carlson, Brauen, Klein, Schroll, & Willig, 2002), the receptivity of the peers who are asked, or the decisions of students who will be receiving support. Although students in this study had a voice regarding which peers were invited to be part of the intervention, it may be important to also consider the types of relationships that are typical within a given context, as well as the social-related goals of the intervention, when considering which peers to involve.

Limitations and Future Research

Future research should address several important limitations associated with this pilot study. First, this exploratory study involved just nine students, limiting the generalizability of the findings to other students and schools. Although substantial gains in certain student outcomes were associated with implementation of the two peer-mediated interventions, the extent to which similar gains will be replicated across a larger sample of students and schools remains to be determined.

Second, considerable variability was apparent in the classroom behavior of students across observation days. Multiple factors clearly shape the experiences and outcomes of students over time, not just the implementation of peer support arrangements. Larger samples and more sophisticated designs are needed to isolate the unique contributions of peer-mediated interventions. To date, large-scale randomized evaluations have been absent in this area of the literature.

Third, interventions were delivered across a single semester, prompting questions about the extent to which gains in peer interactions, social contacts, and friendships will maintain for the short- or long-term. Follow-up studies are needed to discern whether and how efforts to connect students with and without disabilities in high schools extend beyond the classrooms and contexts in which peer-mediated interventions are delivered. The large size and rotating schedules of most high schools, coupled with the shifting peer affiliations that can characterize relationships during adolescence, represent just a few of the challenges associated with promoting durable social connections in secondary schools.

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Fourth, given the range of academic and elective classes in which students were enrolled, we were not able to employ a direct measure of student learning that would be consistent across observation settings. Although our coding of academic engagement allows us to speak to the extent to which students were attending to and involved in ongoing instruction, future research is needed to gauge the degree to which peer support interventions contribute to skill and knowledge acquisition relative to paraprofessional models.

Fifth, we were unable to confirm whether all peers listed as friends shared this same view of their relationship with the student with severe disabilities. Friendships are ultimately defined by reciprocal affirmation (Brown & Larson, 2009). While peer partners described their relationships as friends, other nominated students were not asked the same question. As noted earlier in the discussion, additional research is needed to identify the best approaches for documenting the complex and subjective nature of peer relationships for adolescents with severe disabilities. Moreover, alternative avenues are needed through which students with severe disabilities can share their perspectives on this aspect of their lives.

Sixth, we relied primarily on social-related measures used previously in the literature (e.g., initiations, responses, reciprocity). Yet peer-mediated interventions also hold potential to improve other important communicative skills, such as the ability to self-advocate, request and reject support, comment, and share information. Future research is needed to address whether and how these interventions affect a broader range of communicative functions important during adolescence (Downing, 2005).

Finally, while peer support arrangements were embedded into existing classes, peer networks primarily involved creating new contexts for shared activities. Embedding peer networks into already existing clubs, extracurricular programs, or other school activities might increase the likelihood of finding peers who already have shared interests and common activities. Additional research is needed to explore this implementation pathway more fully.

Summary

Moving students beyond mere presence toward active participation in inclusive classrooms and other school settings is an important, but formidable, task in high schools. The two peer-mediated interventions examined in this pilot project hold promise for creating new opportunities within and outside of the general education classroom to develop peer interactions, social connections, and learning within the context of shared activities. Our findings indicate school personnel can spur important improvements in the outcomes of students with severe disabilities by engaging peers more actively in providing support to their schoolmates. Additional group-design research is needed to more rigorously evaluate the efficacy and social validity of these interventions on a larger scale and in a broader array of schools and classrooms. In the meantime, these preliminary findings provide valuable insights into the promise and possibilities of peer-mediated interventions in secondary schools.

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