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Feasibility of electronic peer mentoring for transition-age youth and young adults with intellectual and developmental disabilities: Project *TEAM* (Teens making Environment and Activity Modifications)

Jessica M. Kramer, PhD, OTR/L[*],
Assistant Professor, Department of Occupational Therapy, Boston University, 635 Commonwealth Ave (SAR 503), Boston MA 02215

Cathryn T. Ryan, MS, OTR/L,
Occupational Therapist, The Bridge of Central Massachusetts, 4 Mann St., Worcester, MA 01612

Rachel Moore, OTR/L, and
Occupational Therapist, Mercy Hospital and Medical Center, 2525 S Michigan Ave, Chicago IL 60616, 312-567-2164

Ariel Schwartz, MS, OTR/L
PhD Student, Boston University, 635 Commonwealth Ave (SAR 552), Boston MA 02215, 617-353- 7522

Abstract

Background—There is a need for mentoring interventions in which transition-age youth and young adults with intellectual and/or developmental disabilities (I/DD) participate as both mentors and mentees. Project *TEAM* is a problem-solving intervention that includes an electronic peer mentoring component.

Methods—Forty-two mentees and 9 mentors with I/DD participated. We analyzed recorded peer mentoring calls and field notes for mentee engagement, mentor achievement of objectives, and supports needed to implement peer mentoring.

Results—Overall, mentees attended 87% of scheduled calls and actively engaged during 94% of call objectives. Across all mentoring dyads, mentors achieved 87% of objectives and there was a significant relationship between the use of supports (mentoring script, direct supervision) and fidelity.

Conclusions—Transition-age mentees with I/DD can engage in electronic peer mentoring to further practice problem-solving skills. Mentors with I/DD can implement electronic peer mentoring when trained personnel provide supports and individualized job accommodations.

[*]corresponding author: 617-353-2702, kramerj@bu.edu.

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Keywords

peer mentoring; social participation; transition-age youth; reasonable accommodations

MeSH headings

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Introduction

The mentoring literature has called for greater inclusion of underserved populations in mentoring interventions, including individuals with disabilities (Britner, Balcazar, Blechman, Blinn-Pike, & Larose, 2006; Sword & Hill, 2003). An increasing number of mentoring interventions have been developed for individuals with spinal cord injuries, visual impairments, and chronic diseases (Balcazar, Kelly, Keys, & Balfanz-Vertiz, 2011; Bell, 2012; Lindsay, Hartman, & Fellin, 2015; Sandhu et al., 2012). Peer support and peer mediated interventions are increasingly used as best practice for transition-age youth with developmental and intellectual disabilities (I/DD) (Carter et al., 2015; Carter, Moss, Hoffman, Chung, & Sisco, 2011). However, in many existing peer support and peer mediated interventions, youth *without* disabilities provide support and mentorship to youth with disabilities. To address the call for greater inclusion of underserved populations (McDonald, Balcazar, & Keys, 2005; National Consortium on Leadership and Disability for Youth, 2016), there is a need to explore the feasibility of implementing peer mentoring interventions in which mentees and mentors are transition-age youth and young adults with I/DD[1].

Peers are defined as individuals who share a common characteristic such as age, gender, or identifying as a person with a disability (Balcazar et al., 2011). Based on the tenets of social learning theory, peer mentoring utilizes the sharing of experiential knowledge as a mechanism for promoting positive outcomes (Dennis, 2003). The knowledge gained through lived experience is hypothesized to be unique from and complimentary to formal instruction or support provided by professionals (Dennis, 2003). Thus, the sharing of experiential knowledge by peer mentors with I/DD may facilitate positive outcomes not possible from professional supports alone (Balcazar et al., 2011; Doull, O'Connor, Welch, Tugwell, & Well, 2005; McDonald et al., 2005). Peer mentoring for transition-age youth with I/DD provides an opportunity for mentees to gain knowledge that supports successful transition to adulthood. For example, mentees with I/DD may benefit from peer mentors with I/DD who have experience setting and achieving goals, who know how to problem-solve barriers to inclusion and participation, and who internalize a positive disability identity (Lindsay et al., 2015; McDonald et al., 2005). The reciprocal nature of peer mentoring (Weiler, Zarich, Haddock, Krafchick, & Zimmerman, 2014) also provides an opportunity for peer mentors with I/DD to learn and benefit from the lived experiences of mentees. Given the potential

[1]In the remainder of this paper, we will use the term I/DD to encompass all of these disabilities.

benefits of peer mentoring for both mentees and mentors, there is a crucial need to understand how peer mentoring interventions can be implemented with transition-age youth and young adults with I/DD.

Due to the underrepresentation of transition-age youth and young adults with I/DD in mentoring (Curtin et al., 2016; Lindsay et al., 2015), there is a limited understanding of how to design and implement peer mentoring interventions with this population. A feasibility study is an appropriate method to determine if a new intervention approach, such as peer mentoring by and for transition-age youth and young adults with I/DD, warrants further development and evaluation (Bowen et al., 2009; Orsmond & Cohn, 2015). Feasibility studies can examine a number of factors related to intervention delivery including the acceptability and suitability of the intervention for the targeted client group, practicality of implementation, resources needed for implementation, and adaptability to local needs and contexts (Bowen et al., 2009; Orsmond & Cohn, 2015). Feasibility research also provides the opportunity to evaluate and refine procedures before undergoing more resource-intensive systematic research designs (DuBois, Doolittle, Yates, Silverthorn, & Tebes, 2006).

The purpose of this study was to examine the feasibility of the electronic peer mentoring component of Project *TEAM*, a problem-solving intervention for transition-age youth with I/DD. First, this manuscript will describe the design of Project *TEAM*'s electronic peer mentoring in an attempt to address the gap in the literature of peer mentoring program descriptions for mentees and mentors with I/DD. Second, the manuscript reports the results of a feasibility study that answered research questions crucial for future implementation and adoption, primarily around issues of acceptability, suitability, and practicality of the intervention: 1) Are transition-age youth with I/DD able to participate in Project *TEAM*'s electronic peer mentoring? 2) Can peer mentors with I/DD achieve Project *TEAM*'s electronic peer mentoring objectives? 3) What supports and resources are needed to implement and manage Project *TEAM*'s electronic peer mentoring?

Design of Project *TEAM*'s Electronic Peer Mentoring

Project *TEAM* Intervention

Project *TEAM* (Teens making Environment and Activity Modifications) is a 12-week problem-solving and advocacy intervention for transition-age youth with disabilities (Kramer et al., 2013). Project *TEAM* enables youth to identify barriers in their physical and social environment, generate solutions to resolve barriers, and request modifications to increase participation in a personal activity goal related to school, work, or community participation. To identify and resolve barriers to goal attainment, youth learn a goal-plan-do-check problem solving strategy, called the "Game Plan." Project *TEAM* is a multicomponent intervention that includes 16 group sessions guided by a manualized curriculum, individualized goal setting and a related community trip, and electronic peer mentoring. The following section describes how Project *TEAM's* electronic peer mentoring component incorporates best practices from the field of mentoring and peer support.

Type of Peer Mentoring Relationship: Instrumental

Instrumental mentoring relationships utilize the development of a close relationship to support the achievement of specific goals (Karcher, Kuperminc, Portwood, Sipe, & Taylor, 2006). An instrumental relationship is most successful when the preferences and needs of the mentee drive the mentoring goals (Karcher et al., 2006). Instrumental mentoring relationships are appropriate for interventions that emphasize skill development and have time constraints (McQuillin, Strait, Smith, & Ingram, 2015), such as Project *TEAM.*

The primary aim of Project *TEAM*'s electronic peer mentoring component is to provide transition-age youth with the opportunity to apply and generalize the Game Plan problem solving process to everyday experiences with guidance from a peer mentor. To achieve this aim, the electronic peer mentoring component includes eight mentoring calls, organized around seven objectives (see Results). Four core objectives (objectives 2–5) foster the mentoring relationship, mobilize the expertise of the mentor, and provide mentees assistance with application and generalization of Project *TEAM* concepts. To further support a mentee-driven relationship, peer mentors are matched with mentees based on the mentor's unique expertise or experience related to the mentee's activity goal.

Format of Peer Mentoring Relationship

Mentors and mentees can establish and enact a relationship using a variety of formats. Electronic mentoring, or "E-mentoring" utilizes electronic forms of communication (e.g. email, online chat, phone calls, etc.)(Single & Single, 2005) that may be more accessible for transition-age youth with I/DD who may have difficulty participating in face-to-face mentoring because of lack of transportation and availability of direct support (McDonald et al., 2005). In two studies, most mentors and mentees with disabilities successfully used electronic forms of communication (Cohen & Light, 2000; Shpigelman & Gill, 2012). However, the same participants also reported a preference for relationships that used both synchronous, electronic communication (e.g., video chat) and face-to-face communication.

Project *TEAM*'s electronic peer mentoring occurred over phone or video chat. This approach reduced transportation, scheduling, and support challenges for both mentees and mentors. Mentee and mentor preferences, resources, and technology skills determined the communication methods used. Electronic forms of communication allowed mentees to interact in a private setting, such as their bedroom at home, and provided mentors with the flexibility to work from home. Mentors also had face-to-face interactions with mentees during the first and last group session and during the individualized community trip related to the mentee's Project *TEAM* goal.

Duration and Frequency of Contact in Peer Mentoring Relationship

The duration and frequency of contact in a mentoring relationship impact relationship quality and thus mentoring effectiveness (Deutsch & Spencer, 2009). In addition, clear expectations for duration and frequency of contact impact the effectiveness of mentoring interventions; programs that provide clear expectations typically result in more effective interventions (DuBois, Portillo, E., Silverthorn, & C., 2011; Karcher et al., 2006).

The duration of Project *TEAM*'s peer mentoring was 12 weeks. During this period, mentors completed eight peer mentoring calls: weekly calls during weeks 1–5 and biweekly calls during weeks 6–12. Each call paralleled the group session curriculum, in which trainees learned each step of the 'Game Plan' problem-solving process. In each successive call, new content learned during the previous group session was incorporated into objectives 4 and 5. To provide clear expectations for the mentoring relationship, the dates and times of each call were scheduled at the start of the intervention according to each mentor's and mentee's preferred schedule.

Selecting and Training Peer Mentors

Mentor selection has been identified as a moderator of mentoring effectiveness (DuBois et al., 2011). A number of mentor characteristics promote successful relationships including the mentor's ability to be consistent and dependable, interest in supporting a mentee, respect for the mentee's viewpoint, and willingness to seek and utilize support from program staff (Sipe, 2002). In addition, alignment between the program's goals and mentor's experiences facilitates more effective mentoring interventions (DuBois et al., 2011).

The primary selection criteria for Project *TEAM* peer mentors included the ability to understand and utilize the Game Plan problem solving process. All peer mentors in this study had either collaborated in the design of Project *TEAM* (Kramer et al 2013) or completed the Project *TEAM* intervention as a participant (with the exception of one peer mentor working at a new Project *TEAM* site). Selection criteria also included an interest in participating in a mentoring relationship, experience helping others, and/or formal advocacy experience. All mentors were paid staff and had intellectual, developmental, and/or mental health disabilities(Table 1).

Peer mentor training increases mentor effectiveness (Britner et al., 2006; Deutsch & Spencer, 2009; DuBois et al., 2011; Shpigelman & Gill, 2012). Training helps individuals develop mentoring skills and establishes expectations for mentoring interactions. Transition-age youth and young adults with I/DD require training approaches that consider their learning needs and thus may be distinct from those used in other mentoring interventions.

Hired peer mentors completed two, 2-hour training sessions to learn the role of a Project *TEAM* peer mentor. In the first session, peer mentors played an interactive card game with research staff and experienced peer mentors. During the card game, peer mentors role-played evidence-based positive mentoring interactions (i.e., sharing personal stories, showing empathy) (Rhodes, Reddy, Roffman, & Grossman, 2005). In the second session, peer mentors learned how to complete the peer mentoring calls and about the structure of each call, including the purpose of each objective and how each call incorporated unique 'topics'. Topics such as shopping, eating out, favorite school activities, and getting a job were chosen because they are interesting and relevant to transition-age youth with I/DD. The purpose of providing specific call topics was to support mentors and mentees in identifying common interests and experiences during objective 2. The topic also provided structure for the application and generalization of the problem solving process during objectives 4 and 5. Peer mentors practiced achieving call objectives and generating examples related to the

topics by role-playing calls with research staff and receiving immediate feedback (Gantman, Kapp, Orenski, & Laugeson, 2012; O'Handley, Ford, Radley, Helbig, & Wimberly, 2016).

Peer Mentor Supervision

Project *TEAM* peer mentors also received ongoing supervision in accordance with best practices in mentoring (DuBois et al., 2011). Supervision provides mentors with opportunities to address potential problems in the relationship and can support mentor self-efficacy. Project *TEAM* interventionists (licensed social workers) and trained research staff (graduate occupational therapy students) supervised peer mentors. Most peer mentors received direct, in-person supervision (see results). All supervision began with approximately 30 minutes to practice the call objectives prior to each call and ended with performance feedback after each call. Some peer mentors had previous mentoring experience and demonstrated advanced technological and social skills; these peer mentors were eligible for remote supervision. In these instances, supervisors monitored the peer mentor's performance by reviewing audio recordings of the previous week's call, and provided feedback via phone prior to the mentor's next scheduled mentoring session. In addition, supervisors met weekly to brainstorm job accommodations that could support mentor success (below).

Peer Mentor Supports and Reasonable Accommodations

Instrumental mentoring interventions require mentors to simultaneously foster positive interactions and monitor achievement of specific objectives. The social problem-solving, decision-making, and adaptability needed to successfully engage in such dynamic and complex mentoring interactions may be difficult for young people with I/DD (American Association on Intellectual and Developmental Disabilities, 2013). Youth with less experience or fewer opportunities to develop social skills, such as youth with I/DD, may benefit from increased structure to successfully navigate the dynamic interactions encountered in a mentoring relationship (Rhodes & Lowe, 2009). Additionally, given the heterogeneity of skills in transition-age youth and young adults with I/DD, peer mentors with I/DD may benefit from individualized supports that capitalize on their unique strengths and preferences (Carter et al., 2011).

The Project *TEAM* peer mentoring process was highly structured and incorporated two supports to foster the success and independence of mentors with I/DD: a peer mentoring "script" and a peer mentor supporter. In addition, the peer mentoring process was grounded in a customized employment philosophy that stressed accessibility and a strengths-based approach (Citron et al., 2008; Rogers, Lavin, Tran, Gantenbein, & Sharpe, 2008). Thus, in addition to these two supports, peer mentors could also receive individualized job accommodations.

Peer Mentoring Scripts—The script provided structure for each call and facilitated mentor independence and adherence to the seven Project *TEAM* peer mentoring objectives. Each script was organized around the seven common objectives. The script included questions and responses that could be used verbatim by the peer mentor and sections the peer mentors could individualize for each mentee. The script also provided space to

document mentee responses. Scripts incorporated universal design for learning standards (National Center on Universal Design for Learning, 2011) including symbols, images, and colors that allowed peer mentors with limited literacy to navigate and use the script as independently as possible.

Peer Mentor Supporter—Mentors with direct supervisors also received support, as needed, during calls. We purposefully used the term 'peer mentor supporter' to describe these supervisors and emphasize: 1) the peer mentor ultimately determined the amount and type of support provided, and 2) the supervisor's role was to support the mentor, not the mentee. Supervisors suggested responses during challenging mentoring interactions, provided mentors with immediate feedback for professional behavior, and helped ensure mentors addressed all objectives. Supervisors did not typically interact with the mentees; during video contacts, the supervisors attempted to stay out of the camera's field of view. Peer mentors informed mentees when a supervisor was present.

Job Accommodations—Supervisors also identified and implemented individualized job accommodations in partnership with peer mentors. This included making modifications to the script or adding additional cues to facilitate successful completion of objectives during each call (see results for examples). When needed, supervisors implemented reasonable accommodations for other aspects of the peer mentor's job including documentation, data collection, time management, and timesheet entry.

Methods

Participants

The feasibility of the Project *TEAM* electronic peer mentoring component was examined in 42 peer mentoring dyads across seven cohorts implemented in two locations (New England = 5, Midwest = 2). A total of 31 peer mentoring dyads took place in the New England location and 11 took place in the Midwest location.

We purposefully recruited Project *TEAM* participants through community agencies and schools serving transition-age youth with developmental disabilities. Inclusion criteria included (a) 14 to 22-years old (transition age); (b) a primary diagnosis of developmental disability; and (c) the ability to attend to activities for 10 minutes and follow two-step directions. Forty-eight youth enrolled in Project *TEAM*, and 42 completed all intervention procedures; we included these 42 youth in the feasibility analysis. Table 2 shows the characteristics of youth eligible for the feasibility study. Of the six youth who were not eligible, five ended study participation before the first peer mentoring call; a sixth participant was withdrawn due to safety concerns and withdrawn data is not eligible for analysis.

Procedures and Data Sources

All procedures underwent ethical review and approval from an institutional review board. To evaluate feasibility, we collected a variety of data including implementation data and 291 audio recorded peer mentoring calls (Appendix). Missed calls were the result of mentee absences, despite attempts to reschedule.

Audio Recordings—All peer mentoring calls were audio recorded. To answer our feasibility research questions, we coded the content of each call as follows. To examine youth with I/DD's participation in electronic peer mentoring (research question one), we coded 'mentee engagement' during calls for each objective. Engagement was defined as a response given to a peer mentor question or statement. Engagement could include one-word responses. We used a related, secondary code to designate 'high engagement,' or more detailed, elaborated responses. To evaluate peer mentors' achievement of peer mentoring objectives (research question two), we coded peer mentors' fidelity to the seven common objectives (objective achieved/not achieved). To determine the supports needed to implement electronic peer mentoring with youth with I/DD (research question three), we coded the peer mentors' use of the script (not used/used verbatim/used with individualization) and the involvement of the direct supervisor (verbal support provided/verbal support not provided during an objective).

Eight graduate students served as coders. Two coders independently coded 75% of calls and met to compare codes and achieve consensus. Discrepancies in coding were resolved during consensus meetings by listening to corresponding sections of audio recordings and identifying code definitions that best described the data. A third coder (first author) resolved discrepancies as needed. We documented coding decisions and referenced documentation during subsequent coding to ensure consistency. After establishing interrater reliability > 90% between one primary coder (second author) and multiple team members, the final 25% of calls were coded by one experienced coder (second author).

Implementation Documentation—To provide additional information to answer research question three, we examined implementation data recorded by peer mentor supporters, supervisors, and the study's principal investigator (first author). Implementation data described how each peer mentor implemented the calls with each mentee and included call location, format, and type of supervision. Implementation data also included job accommodations used by each peer mentor to 1) implement the peer mentor objectives during the call, and 2) complete other related job responsibilities. For all research questions, we also reviewed team meeting notes to identify challenges encountered during implementation and solutions.

Data Analysis—All codes were transformed into percentages by dividing the frequency of codes by the number of opportunities for the code to occur. Each objective in a call was conceptualized as a distinct opportunity for mentee engagement, mentor achievement of objectives, and mentor use of support. For all codes, we examined patterns by call (1–8) and objectives (1–7, across all calls). We conducted additional analyses with codes describing the peer mentors' use of supports during mentoring calls. We collapsed codes describing the mentors' use of the script and direct support into one dichotomous variable (support used/not used). We completed a chi-square analysis to examine the relationship between achievement of peer mentoring objectives and overall use of supports. We categorized job accommodation data into personal assistance or environmental modifications, and reported use of accommodations by peer mentor. Meeting notes were summarized to illustrate solutions to implementation challenges in our "feasibility in the field" text boxes.

Results

Question 1: Are transition-age youth with I/DD able to participate in Project TEAM's electronic peer mentoring?

Call attendance rate was 87% for all peer mentoring calls across all dyads. By individual dyads, attendance ranged from 4 to 8 completed calls (M=6.96, SD=1.02; table 3). Call length ranged from 4 to 54 minutes (M=20, SD=10 minutes). Calls grew successively longer as each call addressed more content and incorporated more steps of the Game Plan problem-solving process.

Mentees were engaged (including both engaged and highly engaged) 94% of the time across calls (Text Box 1). Mentees' rate of engagement was relatively stable across calls with no clear trend (Table 3). We found slightly higher levels of 'high engagement' during calls 1–5 which occurred weekly, compared to calls 6–8 which occurred biweekly.

Text Box 1

Feasibility in the Field: Adapting Electronic Mentoring to Meet Trainees' Unique Preferences

We encouraged mentees to engage in the electronic peer mentoring process using a variety of methods based on their preferences and needs. One mentee used text messaging when the amount of information in the verbal phone conversation became overwhelming. Another mentee and mentor dyad who both had articulation challenges used Skype™ with synchronous, typed messaging to support their conversation. Sometimes we were not able to identify appropriate adaptions for mentees, and mentees had a difficult time engaging in electronic peer mentoring. Mentees occasionally ending the mentoring session abruptly or failed to engage even with repeated prompts from the mentor.

Mentee engagement by objective ranged from 80–99% engaged (including both engaged and highly engaged) (Text box 2). We examined engagement in the four core objectives that aligned with the instrumental goals of the relationship: Objective 2 (98%), Objective 3 (99%), Objective 4 (97%) and Objective 5 (98%). Objective 2 had the highest level of 'high engagement' (35%). We also observed that objective 6, reminder to complete homework, had the lowest level of mentee engagement (80%).

Text Box 2

Feasibility in the Field: Parent Involvement in Electronic Peer Mentoring

At the beginning of the intervention, many parents expressed concerns about mentees' ability to answer the phone or engage in a phone conversation. As a result, some mentees received direct support from their parents during mentoring calls. Parental support ranged from less intensive, such as setting up a computer for Skype™, to more intensive such as helping the mentee answer a peer mentor's question. We did not systematically gather data on parental support, as we could not accurately document the amount of parent

support provided over the phone. However, parents appeared to be less involved over time. Occasionally, parental involvement interfered with direct conversation between the peer mentor and mentee. In an attempt to foster a peer-to-peer relationship, peer mentors and supervisors educated parents about the purpose of the mentoring relationship. We assured parents that mentees were not required to answer questions correctly and it was ok if mentees had difficulty during the call. We also highlighted the peer mentor's capacity to handle challenging situations and their use of direct supervision during most calls. However, parents may have assumed that mentees needed additional support to manage the content addressed during peer mentoring calls. In addition, parents may have felt direct support was a safeguard for mentees with a history of aggression or frustration.

Question 2: Can peer mentors with I/DD achieve Project TEAM's electronic peer mentoring objectives?

Across calls, the nine Project *TEAM* peer mentors achieved 87% of objectives. Peer mentors achieved the highest percentage of objectives during call 1 (92%) and the lowest percentage in calls 6 and 7 (84%). When examining achievement of individual objectives across all calls (Table 4), peer mentors most frequently achieved objective 2 (sharing interests about the topic of the week) and least frequently achieved objective 1 (introduce yourself).

Question 3: What supports and resources are needed to implement and manage Project TEAM's electronic peer mentoring?

Overall, peer mentors used the script 74% of the time, and use of the script was stable across calls (range: 72–78%). Use of the script by objective ranged from 65–80% (Table 4). Peer mentors most frequently added individualized information to the script during objective 2 (sharing interests about the topic of the week; 56%) and least frequently during objective 1 (introduce yourself; 22%).

Across calls, peer mentors used direct support 33% of the time. Use of direct support decreased from call 3 (38%) to call 6 (30%) and was lowest in call 8 (27%) (Text Box 3). Use of direct support by objective ranged from 20–46% (Table 4).

Text Box 3

Feasibility in the Field: Indirect Mentor Supervision

Of the three peer mentors eligible for indirect supervision, two mentors relied heavily on the script to achieve objectives and facilitate mentee engagement. One peer mentor with indirect supervision found the script restrictive and alternatively used a modified outline of key objectives, content, and questions for each call. Although mentors with indirect supervision demonstrated strong interpersonal and problem solving skills, we did not match mentors to mentees with significant and consistent communication or behavioral needs. Indirect supervision was scheduled, when possible, prior to a scheduled peer mentoring call to review the mentoring objectives and content for each call. Indirect supervision also included time to help peer mentors problem solve challenges with other

job related responsibilities such as entering work hours, uploading audio files to a secure portal, and technical assistance with audio recording equipment.

There was a significant relationship between the use of supports and the attainment of an objective [χ^2 (1, N = 3602) = 1242.25, p < .01]. Analysis of the observed values suggests that when mentors used support they most often achieved objectives and rarely failed to achieve objectives (46 of 2718 occurrences). Mentors who chose not to use supports still achieved objectives about half of the time (480 out of 884 occurrences).

Peer mentors most frequently used the phone to conduct mentoring calls based on mentor and mentee preferences, skills, and access to technology. Of the 42 dyads, 30 utilized the phone (71%); the remaining 12 utilized video chat technology (29%) (e.g. Skype™). Most peer mentors (7 of 9) implemented the calls in their personal homes (31 mentoring dyads), and the remaining 11 mentoring dyads were implemented in a university research lab. All peer mentors with multiple mentoring relationships implemented calls in the same location (home or lab), including relationships both within and across cohorts.

A direct supervisor was present during mentoring calls for 30 of the 42 dyads (Text Box 4). Eight peer mentors with multiple mentoring relationships over multiple cohorts used a consistent supervisory style (2 indirect, 6 direct). One peer mentor working from home with direct supervision during her first mentoring relationship transitioned to indirect supervision for her subsequent three mentoring relationships.

Text Box 4

Feasibility in the Field: Direct Supervision Logistics

Many peer mentors working in their homes used a time sheet to “sign in” and “sign out” of work to designate the beginning of a ‘work space’ in the home context. This alleviated distraction from television, chores, other family members, and other electronic communication not related to peer mentoring. Many supervisors also developed work agendas for peer mentors. The agenda provided mentors with a clear understanding of their responsibilities and how time would be spent during their work period. On average, each mentoring relationship required about 1 hour of direct supervision per call. This included time to practice prior to each call, implement each call, provide immediate performance feedback, and assist with other job related responsibilities. To optimize time and resources, a peer mentor would typically meet with two mentees in the same afternoon. Between calls, most mentors needed to take a short break and have a snack. These breaks helped mentors relax and remain focused for the second successive mentoring call. Mentors never conducted more than two successive mentoring calls.

All 9 peer mentors utilized individualized job accommodation (Table 5). Two peer mentors were high accommodation users, and needed both types of job accommodations (personal assistance and environmental support) during call implementation and to meet related job responsibilities. Mentors used more individualized accommodations for related job responsibilities than implementation of peer mentoring objectives (Table 5). In addition, peer

mentors utilized job accommodations in the form of personal assistance more often than environmental modifications or visual supports.

Discussion

Overall, the findings indicate that Project *TEAM's* electronic peer mentoring component is suitable and acceptable for mentors and mentees with I/DD. Implementing Project *TEAM*'s peer mentoring is feasible, but required extensive resources compared to other mentoring interventions (Deutsch & Spencer, 2009; Shpigelman & Gill, 2012), mainly the involvement of highly trained research staff as direct peer mentor supervisors. In this discussion, we will review results and consider implications for practice. These insights will benefit future implementation of Project *TEAM* and may be relevant to other instrumental peer mentoring programs for youth and young adults with I/DD.

The acceptability and suitability of Project *TEAM*'s electronic peer mentoring and peer mentoring objectives is supported by: 1) high rates of mentee attendance, 2) high levels of mentee engagement, and 3) acceptable to high rates of mentor fidelity to mentoring objectives. Although the literature regarding youth with I/DD's familiarity with and use of communication technology is inconclusive (Orsmond, Shattuck, Cooper, Sterzing, & Anderson, 2013; Solish, Perry, & Minnes, 2010; Tanis et al., 2012), our findings suggest youth with I/DD are able to use communication technology and find use of technology acceptable as part of a mentoring relationship. Peer mentoring dyads utilized a variety of synchronous forms of electronic communication, which is consistent with the expressed preferences of youth with disabilities in previous mentoring studies (Shpigelman & Gill, 2012). The flexibility of scheduling and location afforded by electronic peer mentoring appears uniquely suited for mentors with I/DD, who had many restrictions impacting their work availability including transportation restrictions (e.g., dependent upon parents or accessible transportation services), scheduling conflicts with other educational and vocational services, and even medical and impairment related needs such as fatigue and medication management. Future implementations of Project *TEAM*'s peer mentoring should continue to provide mentors and mentees with a choice of their preferred communication technology. The introduction of new communication technologies such as phone apps and web-based conferencing should also be explored as potential methods for electronic peer mentoring suitable for mentors and mentees with I/DD.

Results also indicate youth and young adults with I/DD can implement Project *TEAM*'s electronic peer mentoring component with acceptable fidelity to instrumental mentoring objectives. However, the need for appropriate support should not be underappreciated. Peer mentors more frequently met objectives when they used some type of support, either the universally-designed mentoring script or direct support from supervisors. In addition, peer mentor attainment of objectives was facilitated by a customized work environment that incorporated personalized accommodations (Citron et al., 2008; Rogers et al., 2008). Over time, peer mentors' use of the script remained relatively consistent, while the mentors' use of direct support from supervisors declined. Increased independence in the completion of calls may have resulted from more effective use of the script, increased familiarity with objectives, the integration of optimal accommodations, and/or experience as a peer mentor.

However, for each relationship, all peer mentors initially used more direct support compared to later in the relationship, regardless of the peer mentor's previous experience and number of past mentoring relationships. This finding suggests that, although resource intensive, mentors may need increased direct support at the beginning of each relationship to adapt to the unique interests, preferences, and needs of the mentee. Due to the apparent importance of direct support, future implementations should incorporate explicit training for supervisors on effective direct support strategies. Strategies identified in previous research, including recognizing shared interests, using communication cues such as visuals, and fading assistance during interactions (Carter et al., 2011) may support positive interactions and more positive outcomes for both mentors and mentees with I/DD.

Not all aspects of Project *TEAM*'s peer mentoring may have been optimally designed for mentees and mentors. Slight decreases in mentees' 'high engagement' and mentors' achievement of objectives across calls suggests both experienced more challenges as the intervention progressed. Each successive call included more content and more steps of the Game Plan problem solving process, and thus, required both the mentors and the mentees to expend more effort and remain engaged for a longer period of time. In addition, the call schedule switched from weekly to bi-weekly in the second half of the intervention. Mentors and mentees may have had difficulty remembering intervention content and mentoring objectives when contact became less frequent. Anecdotally, we observed mentors felt very positive about the calls initially, became more discouraged and confused halfway through the eight calls, and then increasingly gained confidence again towards the end of the relationship. Increased consistency through weekly calls may help both mentors and mentees remember expectations and engage more successfully in the mentoring process (Deutsch & Spencer, 2009). Modifying the objectives to limit call length to 20 minutes (mean length of calls) may also ensure mentors and mentees can attend throughout the entire call and reduce frustration and overall cognitive demands.

Promoting Effective Implementation of Electronic Peer Mentoring with Youth and Young Adults with I/DD

Although implementing instrumental, electronic peer mentoring programs with youth and young adults with I/DD is feasible, our study suggests two elements are crucial for the success of this approach: 1) fostering a balance between addressing instrumental mentoring goals and developing a meaningful mentoring relationship and 2) ensuring adequate administrative capacity and skills to support all aspects of the mentoring process.

Overall, our findings suggest that while the inclusion of explicit instrumental goals promotes the feasibility of mentoring relationships for youth and young adults with I/DD, relationship development is also a critical and valued component that must be supported and emphasized throughout the mentoring process. The primary aim of Project *TEAM*'s peer mentoring component was to support mentees' application and generalization of the intervention content. However, our results suggest most peer mentors and mentees also valued the opportunity to get to know each other and build a relationship centered on shared lived experiences. Mentees were most engaged and mentors had the highest levels of fidelity when addressing objectives related to their unique interests and strengths, such as when talking

about the topic of the call (objective 2) or the mentee's Project *TEAM* goal (objective 3). These objectives were explicitly designed to operationalize the underlying mechanisms of peer mentoring relationships and develop stronger connections to improve outcomes (Wanberg, Welsh, & Kammeyer-Mueller, 2007).

While the inclusion of these objectives supported relationship development in most dyads, we found in research reported elsewhere not all Project *TEAM* dyads established a meaningful mentoring relationship (Ryan, Kramer & Cohn, 2016). When coding mentor achievement of objectives for this feasibility study, we observed that some peer mentors focused on achieving call objectives to the detriment of relationship formation; these mentors tended to interpret discussion about personal experiences as 'off topic' rather than an opportunity to form relationships and improve overall mentoring outcomes. Thus, effective implementation of mentoring interventions for youth and young adults with I/DD must include additional training and ongoing supervision to promote a balance between relationship development and instrumental goal achievement. Supervisors can support peer mentors to adjust their approach or use alternative interaction strategies to achieve and maintain a balance in the mentoring relationship.

Implementing electronic peer mentoring required extensive administrative capacity, resources, and skills to provide the flexible and individualized supports used by mentors with I/DD. Most mentors required customized job accommodations to implement objectives and/or carry out other job responsibilities. Supervisors relied on advanced observation and task analysis skills to identify optimal accommodations that were responsive to each mentor's unique strengths, the unique challenges encountered in each mentoring relationship, and the work location (home vs. research lab). Incorporating optimal direct support strategies and environmental supports required continual adjustment and consultation with the study's PI and intervention team. In addition, supervisors relied upon strong interpersonal skills to foster a positive and supportive work environment in which the mentor felt comfortable identifying and using accommodations and requesting additional support. This was essential, as fostering a work environment in which the mentor with I/DD feels empowered may also foster the mentor's feelings of capacity and effectiveness as a mentor (Lunt & Thornton, 1994).

Providing the required level of supervision and customization in the peer mentors' homes required a relatively large and well- qualified work force. Our position within a university environment enabled our research team to easily recruit numerous graduate students to serve as direct supervisors at minimal to no cost (e.g., independent study and research coursework), and to ensure each supervisor had the necessary time and consultation to implement effective job accommodations. Community-based organizations adopting electronic peer mentoring should consider partnerships with local colleges or vocational training institutions, as such partnerships could provide students with valuable hands-on experience and ensure organizations have access to highly-qualified personnel to serve as supervisors.

Implementation also required access to resources including equipment and transportation. The use of multiple communication technologies (e.g. phone, video chat, text messaging)

required access to computers, phones, and high speed internet connections. All mentors in our study had access to the needed technology in their homes or through our research lab, but this technology can be cost prohibitive for many individuals with disabilities and community-based programs serving transition-age youth with disabilities. Allowing mentors to work from home meant direct supervisors required us to allocate resources for transportation reimbursement. Community-based organizations should consider other solutions that could address the resource demands associated with electronic peer mentoring, such as providing mentors with transportation to a central location, using technology and meeting spaces provided at local libraries, and incorporating time for mentoring relationships into current programming to reduce additional transportation and time demands.

Limitations and Future Research—Several limitations stem from the data used to operationalize our feasibility questions. Operationalizing engagement as any response, including a one-word answer, may over represent mentee involvement in the peer mentoring calls. However, defining engagement in this way accounted for the heterogeneity in mentees' communication abilities. As noted, we were unable to document the support parents provided to mentees. This could impact the feasibility of electronic mentoring for mentees with I/DD. Our study examined the electronic component of Project *TEAM*'s peer mentoring; future research should examine similar feasibility questions related to implementation of the entire peer mentoring component, including the face-to-face interactions and community trip.

This study did not include a direct evaluation of satisfaction or acceptability from mentors or mentees. However, other published research about Project *TEAM* includes both positive and negative feedback about the peer mentoring component from both mentees and parents (Kramer et al., in press). In addition, research is needed to understand how engagement in electronic peer mentoring relates to Project *TEAM* outcomes. Future research should also explore the perceptions of peer mentors with I/DD, and how their experience of mentoring changed over successive mentoring relationships.

Conclusion

The purpose of this study was to examine the feasibility of Project *TEAM*'s electronic peer mentoring component, focusing on the acceptability, suitability, and practicality of implementation. Our findings suggest peer mentors and mentees with I/DD are able to participate in structured mentoring relationships using electronic communication. However, the magnitude of resources required to implement calls likely decreases the practicality of this intervention approach for community-based organizations. In addition to addressing the extent of required resources, our findings also point to other aspects of Project *TEAM*'s peer mentoring that could be improved to support mentoring effectiveness. Results of this study provide support for the inclusion of transition-age youth and young adults with I/DD in mentoring interventions and suggest that this intervention approach warrants further investigation.

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APPENDIX

	Data Sources		
Research Question	**Analysis of Audio Recordings**	**Implementation Data**	**Data Analysis**
1) Are transition-age youth with I/DD able to participate in Project *TEAM*'s electronic peer mentoring? *	Codes: *Trainee engagement* *Achievement of objective*	*Call attendance* *Call length*	Frequencies and percentages calculated by call and objective across all dyads
2) Can peer mentors with I/DD achieve Project *TEAM*'s electronic peer mentoring objectives? *	Codes: *Achievement of objective* *Use of script* *Use of peer mentor supporter*		Frequencies and percentages calculated by call and objective across all dyads Chi square analysis for achievement of objectives and overall use of supports across all calls
3) What supports and resources are needed to implement and manage Project *TEAM*'s electronic peer mentoring? *		*Call format* *Type of supervision* *Peer mentor location* *Job accommodations*	Frequencies and percentages calculated by dyad and peer mentor Job accommodations categorized based on

	Data Sources		
Research Question	**Analysis of Audio Recordings**	**Implementation Data**	**Data Analysis**
			purpose and type, percentages calculated by peer mentor

*Research questions were derived from Orsmond & Cohn (2015)

Table 1

Peer Mentor Characteristics

	***n*= 9**
Age	M= 22.6 yrs (Range 17–35)
Gender	
Male	4
Female	5
Number of peer mentoring relationships	M= 4.67 (Range 1–11)
Diagnosis	
Down Syndrome	4
Cerebral Palsy	2
Dubowitz Syndrome	1
Muscular Dystrophy	1
Anxiety/Depression	1
Intellectual Disability	5

Table 2

Characteristics of mentees (n=42)

Characteristics	Number	Percentage
Gender		
Male	26	61.9
Female	16	38.1
Ethnicity		
Hispanic	2	4.8
Non-Hispanic	40	95.2
Race		
Asian	5	11.9
Black or African American	2	4.8
White	31	73.8
Others	4	9.5
Diagnosis *		
Chromosomal abnormality or congenital malformation	7	16.7
Pervasive and/or specific developmental disorder	17	40.5
Cerebral palsy	4	9.5
Intellectual disability	11	26.2
Traumatic brain injury	1	2.4
Sensory impairment	1	2.4
Epilepsy/Recurrent Seizures	1	2.4
Intellectual disability **		
Yes	27	64.3
No	15	35.7
Reading level		
Below grade level	35	83.3
At grade level	7	16.7
Family income		
< $29,999	1	2.4
$30,000 – $59,999	6	14.3
$60,000 – $99,999	8	19.0
$100,000 – $129,999	7	16.7
> $130,000	19	45.2
Missing	1	2.4

* Primary diagnosis obtained from parent report, and coded into ICD-10 categories.

** All occurrence of intellectual disability based on most recent IQ test

Table 3

Mentee attendance and engagement in Project *TEAM's* electronic peer mentoring over time

	Call 1	Call 2	Call 3	Call 4	Call 5	Call 6	Call 7	Call 8	Mean
Attendance (%)	88	79	81	83	93	86	95	88	87
Engaged* (%)	96	94	92	92	90	93	96	97	94
Highly Engaged** (%)	23	28	24	21	23	20	21	19	22

*Engaged includes both 'engaged' and 'highly engaged'.

**Highly engaged percentage is out of percent engaged.

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Table 4

Mentor fidelity to Project *TEAM* peer mentoring objectives and use of supports *

	Objective Description	Objective Met (%)	Peer Mentor Use of Script (%)	Peer Mentor Use of supporter (%)
Objective 1: Introduce yourself	Let the mentee know who is calling them	64	65	20
Objective 2: Sharing interests about topic of the week	Show and interest in the mentee and/or identify something the mentee and mentor have in common using call topic	98	80	46
Objective 3: Discuss mentee's Project *TEAM* goal.	Provide mentee with opportunities to think about and talk about their Project TEAM personal activity goal	89	71	38
Objective 4: Review new material	Review the new material introduced in the most recent module by reviewing concepts and giving examples from own life	89	77	38
Objective 5: Practice the game plan using topic of the week	For each step of the game plan ask the self-talk question and provide an opportunity for the mentee to problem solve	80	75	30
Objective 6: Homework reminder	Remind mentee to complete practice (homework)	92	78	25
Objective 7: Asking questions	Give the mentee the opportunity to ask any questions	91	76	39
	Mean across all calls and objectives:	87%	74%	33%

* Supports available to all mentors included a script and a peer mentor supporter

Table 5

Job accommodations provided to nine mentors

	*n**	Examples
Implementing Mentoring Objectives		
Personal Assistance**	5	• Direct supervisor held up symbols to provide feedback about performance during the call (e.g., stop sign to 'stop and think', exclamation point to 'act excited'). The mentor and supervisor jointly identified symbols that would meet feedback needs. • Additional practice and role play before each call. • Additional education about the impact of mentee's mental health status on communication and attention. • Post-It notes placed on top of the script in the moment to indicate when to try another question, provide feedback, or go to the next objective.
Environmental Modifications/Visual Support***	5	• Shortened version of the script: reduced number of potential questions and suggested responses for each objective. • Large font/text. • Outline version of the script: included key questions for each objective, topic of the week, and scheduling information.
Mentor related job responsibilities		
Personal Assistance**	9	• Initial set up and training for technology use (audio recorder, phone, Skypeä, etc.). • Entering work hours into the university's web-based system. • Assistance managing the audio recorder during the calls.
Environmental Modifications/Visual Support***	5	• Adapted time sheet to record and convert work hours in preparation for web-entry. • Written agenda of work tasks during mentoring time. • Providing breaks between successive mentoring calls.

*Each peer mentor used a unique combination of individualized job accommodations; the *n* in each column is reflective of a different subset of peer mentors.

**Accommodations using personal assistance required the active involvement of the direct supervisor each time the accommodation was used.

***Environmental modifications/visual supports could be used by the mentor without direct involvement of the supervisor after they were designed and implemented.