



Using Technological Innovations to Support Parents of Young Children with Autism

15

Susan L. Hepburn and Elizabeth M. Griffith

Abstract

In this chapter, we will explore the current research on the use of technology in parent education and support and will reflect on our clinical experiences implementing a family-focused telehealth program. We will begin broadly, providing a brief synopsis of what has been studied in various clinical populations, highlighting what we believe can be applied to families of young children with ASD. We will then emphasize the translational aspects of telehealth practice, drawing from our group's experiences launching a videoconferencing version of a family-focused, evidence-based intervention. After outlining

the implementation steps of telehealth program development, we will conclude with specific modifications to therapist/educator communication when interacting with families through a videoconferencing platform.

Technological Innovations for Parent Education and Support for Families of Young Children with Autism Spectrum Disorder

Obstacles to Family-Centered Care

Family-centered, evidence-based intervention can be difficult for parents of young children with ASD to access for many reasons. First, there's geography: for families who live in rural communities, these services may be too far away to access on a regular basis. Then, there's time: even families from urban and suburban communities report that travel time is a significant obstacle to consistent participation in family-focused interventions (DeVany, Alverson, D'Iorio, & Simmons, 2008; Kaiser, 2011). Furthermore, given the economic stresses of raising a child with special needs, many parents find themselves working more, leaving little time for in-person contact with clinicians (Parrette et al., 2012). Some families adapt to these new challenges by compartmentalizing roles, whereby one parent

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S. L. Hepburn (✉)

Department of Human Development and Family Studies, College of Health and Human Sciences, Colorado State University, Fort Collins, CO, USA
e-mail: susan.hepburn@colostate.edu

E. M. Griffith

Department of Pediatrics, University of Colorado School of Medicine, Aurora, CO, USA

works extra hours and one participates actively in the child's treatment and education. Even this strategy has its drawbacks, as the parent who is primarily in the "work" role likely misses out on important learning opportunities focused on how to interact and intervene within the flow of everyday life. These missed opportunities for the parent can result in missed learning opportunities for the child, increasing tension within the parents' relationship, and a decrease in perceived self-efficacy for the working parent (Jones et al., 2014). Thus, space and time pose real barriers to our ability as practitioners to educate, support, and collaborate with parents of young children with ASD.

The Potential of Technology to Overcome Access Barriers

Technology may offer some feasible, cost-effective, and promising solutions to barriers to delivering parent education and support to families of young children with ASD. See Boisvert and Hall (2014) for a review. In fact, there's a growing evidence base on this topic in the general early childhood literature, as well as in special populations, such as traumatic brain injury (Wade, Oberjohn, Conaway, Osinska, & Bangert, 2011), fetal alcohol syndrome (Hanlon-Dearman, Edwards, Schwab, Cox, & Longstaffe, 2014), attention deficit disorder (Xie et al., 2013), developmental coordination disorder (Miyahara, Butson, Cutfield, & Clarkson, 2009), and autism spectrum disorders (Wainer & Ingersoll, 2014; Vismara, et al., 2016). Findings across studies are fairly consistent, suggesting that feasibility (i.e., user-friendliness, cost/time burden, reliability, user satisfaction) is strong across many different technological applications, used for many different purposes (Baharav and Reiser, 2010; Burke et al., 2008, Gettings, 2015; Hall and Bierman, 2015; Jones et al., 2014; Wainer and Ingersoll, 2011).

Anytime we discuss the role of technology as either an enhancement to an intervention or as the primary delivery method for an intervention, it is important that we specify what we mean by the

term "technology." See Table 15.1 for a summary of the technological applications, features, and uses (appropriate and inappropriate).

Lessons Learned About Technology and Parent Education

In a thoughtful review of studies of early childhood parent education delivered or enhanced by technology, Hall and Bierman (2015) suggest that the field has produced several evidence-based approaches to effective parenting; the current challenge is not to conceptualize interventions but rather to figure out how to implement the interventions in real-world settings. This emphasis on uptake in communities or "diffusion" is also viewed as the next step in the field of parent education by other leaders in intervention research (e.g., Brooks-Gunn, Berlin, & Fuligni, 2000; Jones et al., 2013). Technological approaches to parent education, such as online courses or videoconferencing sessions with parent coaches, have the potential to facilitate the diffusion of evidence-based parenting programs; however, researchers and practitioners are reporting some important considerations in supporting parents through technological applications, as described below. In the next section, we summarize the common themes from the existing literature on this topic that we believe are most relevant to the use of telehealth in parent education for families of young children with ASD.

Begin with an evidence-based parent education program It is important to remember that technology merely provides a medium for delivery of content but does not replace the content. Effective use of technology in parent education will begin with a parent education curriculum or intervention that has been systematically developed, evaluated, refined, and evaluated again, sometimes several times before a technologically rich delivery method is even contemplated. Examples of evidence-based parent training approaches that have been studied in various formats in the general parent-child literature (e.g., live and in-person or through videoconferencing)

Table 15.1 Considering the fit between technological tools and clinical use

Tools	Description/features	Clinical use	
		Appropriate	Inappropriate
Listserves and forums	Web-based information service provided through email or website to individuals who have signed up to learn more and share with others about a particular topic Self-paced Asynchronous	Sharing tips, experiences, and resources Familiarity-building (i.e., broadens one's exposure to the topic, allows for exploration of ideas and viewpoints) Support-building (i.e., reminds learner that others understand and also grapple with the topic)	Individualized advice or intervention Crisis support Private/sensitive information-sharing
Online educational modules	Web-based, multimedia, and explicitly structured instructional tools that deliver chunks of content in a predetermined sequence for a clearly defined user group "Asynchronous": instructor builds the modules but doesn't interact with learner Learner can repeat content until learned	Motivated adult learners Foundation-building (i.e., good method for teaching concepts, facts, and general knowledge in preparation for later skill-building) Illustrating different perspectives on complex phenomena	Skill-building and procedural learning (i.e., doesn't work as well for teaching how to perform complex actions, behaviors – or any skill where feedback or coaching is critical for mastery, such as interacting with a child)
Webinars	Web-based lectures – usually covering a topic or theme and not part of a larger curricula like online modules – often presented as a PowerPoint slide show accompanied by a speaker's voice Delivered live and often archived for later reference Often includes opportunity to ask questions and make comments (during live version)	Interested adult learners – topic and speaker(s) need to be compelling to maintain interest, as learner is mostly passive Presenting an overview of a topic/area of study Describing a project or sharing results of a study Engaging a panel in moderated discussion	Adult learners who need to be more active and self-directed Skill-building
Video-conferencing	"Real-time" video chat between a clinician and parent(s) via cameras mounted on computers in separate locations; all participants see and hear all other participants through multiple windows on the computer screen Can be conducted in several formats, such as (a) 1:1 context (1 clinician to 1 parent), or (b) in a small group context (1 clinician to 5 parents – All on screen simultaneously from 5 different places), or (c) in a 1: Large group context (1 clinician in office to 25 parents all sitting in a classroom together, viewing clinician via LCD projected image) Participants are actively engaged in discussions, activities, and sharing experiences Can record and archive sessions	Adult learners of various levels of familiarity and experience with shared topic who are interested in learning from a specialist and from other learners Foundation-building Skill-building – Introducing a new skill or honing application of learned skills Facilitating social support among learners with similar goals Engaging learners in self-reflection by sharing progress since last session Promoting critical thinking and problem-solving through discussion of real-life challenges in applying skills	Adult learners who prefer to learn through passive or independent means Adult learners who are not available when clinicians are available (e.g., adults who work nights) – Requires consistent attendance to be useful

include the Triple P Positive Parenting Program (Sanders, 2012; Telehealth version: Reese, Slone, Soares, & Sprang, 2012) and the Incredible Years Program (Webster-Stratton & Reid, 2010).

Several autism-specific parent education programs designed for telehealth delivery are also based on evidence-based approaches. Vismara, Young, and Rogers, (2012), Vismara, McCormick, Young, Nadhan, and Monlux (2013), Vismara et al. (2016) used videoconferencing to deliver parent education based on the Early Start Denver Model (ESDM; Rogers & Dawson, 2010; P-ESDM; Rogers et al., 2012). Ingersoll, Wainer, and colleagues (2013, 2016) developed a caregiver training program as an adaptation to Reciprocal Imitation Training (RIT; Ingersoll & Schreibman, 2006). Lindgren, Wacker, and colleagues (Lindgren et al., 2016; Suess et al., 2014; Wacker et al., 2013) developed a series of studies examining the use of telehealth to teach parents how to implement functional communication training (FCT; Carr & Durand, 1985). Boutain (2014) reported on a parent education program focused on empirically supported principles of applied behavior analysis.

Adapt responsibly When adapting an intervention for delivery through a novel medium (such as videoconferencing), it is important to differentiate the critical elements, or the core/fundamental aspects of the intervention that are associated with evidence-based outcomes, from the delivery features, or elements that are not essential for therapeutic benefit. This allows for flexible adaptation to the evidence-based practice, which is often required when translating intervention research into practice (Kendall, Chu, Gifford, Hayes, & Nauta, 1999). Sometimes it's an empirical question as to which intervention features are critical and which are optional. For example, in our study of the impact of cognitive behavior therapy (CBT) for anxiety in youth with autism spectrum disorder delivered via videoconferencing (Hepburn, Blakeley-Smith, Wolff, & Reaven, 2015), we worked to preserve the critical elements of CBT within the in-person *Facing Your Fears* program (i.e., psychoeducation, cognitive restructuring, exposure practices; see Reaven,

Blakeley-Smith, Culhane-Shelburne, & Hepburn, 2012) in the telehealth version, knowing that the method of interacting with the clinicians would be different (i.e., via videoconferencing). In order to understand the potential efficacy of using technology to deliver the CBT program, it was important to conduct fidelity assessments to examine the presence of the critical elements across treatment and to obtain parent and youth ratings of the quality of the therapeutic alliance. The information obtained by these process measures provided a context for interpreting the observed outcomes. Results of this study suggested that fidelity to critical elements of CBT was very strong for sessions that focused on psychoeducation, but only moderately strong for sessions that focused on practicing facing fears (i.e., exposure), which is similar to what's reported in the live version of the program (Blakeley-Smith et al., 2016). The quality of therapeutic alliance was high and comparable to what is reported in live sessions. There was a significant reduction in youth anxiety symptom severity in the telehealth program; however it was not as robust as has been observed in live sessions. The fidelity and alliance data helped us to identify which aspect of the telehealth program was lacking, relative to its live counterpart. Thus, the next step for this program is to revisit the exposure protocols and try to bring this component of the telehealth program closer to the empirically supported live version.

Embed some interactions Asynchronous technology use (e.g., an online portal for self-instruction) has been found to be less effective than a blended approach, where technology use either involves or is accompanied by some kind of interaction (e.g., email, videoconferencing). This has been found in studies of parent training for youth with traumatic brain injury (Antonini et al., 2014; Wade et al., 2011), fetal alcohol syndrome (Kable, Coles, Strickland, & Taddeo, 2012), and child behavioral disorders (Sanders, 2012). The evidence suggests that interpersonal interaction – even through a device, such as a telephone or computer – adds value to asynchronous web-based learning approaches in promoting adherence and thus increasing the potential

for positive change (Hall & Bierman, 2015; Ingersoll et al., 2016)

Maximize motivation Adherence to an intervention requires persistence, and maintaining motivation is an important part of promoting change. Jones et al. (2013) suggest that self-determination theory (Deci & Ryan, 2002) has relevance for technology-assisted parent training interventions. Briefly, self-determination theory posits that lasting behavior change happens when people are motivated by one or more of three basic human needs, to be competent, autonomous, and connected to others. Jones et al. (2013) suggest that technological delivery of parent training interventions will promote lasting behavioral change if these three human needs are addressed. Social networking tools, asynchronous web-based content, videoconferencing, and coaching-at-a-distance programs could each address aspects of self-determination. Combining them may even maximize motivation, as has been suggested by the developers of InfantNet, a multimedia, multi-platform parent education and coaching program with elements and services that range from asynchronous self-study content on the Internet to text message reminders to personalized coaching via telephone (Baggett et al., 2010). Such diverse approaches offered simultaneously help to engage adults with different learning styles.

Monitor intervention dosages Engaging parents so that they want to attend parent education sessions is absolutely critical for intervention success. Given that many technologically assisted interventions depend upon the adult initiating the learning activity, motivation (as described above) will impact the intensity – or dosage – of the intervention that is delivered to a particular parent. Few studies have examined this factor, and more work is needed in this area to understand the impact of intervention intensity on outcome. For example, Antonini et al. (2014) studied the impact the *iInteract* program, a technology-enhanced intervention for parents of youth with traumatic brain injury and reported that the number of

sessions completed by the parents was correlated with intervention impact.

Employ technology to individualize interventions Several parent education interventions incorporate technology as a tool for individualizing interventions within a clinic or school-based program. For example, asking parents to film interactions with their children at home and then reflecting on those films in treatment sessions has been used in many parent-child interventions (Jones et al., 2013; Webster-Stratton & Reid, 2010). In the parent education literature in autism, videotape review procedures are included in many parent training programs, including the Early Start Denver Model (Vismara et al., 2013; P-ESDM; Rogers et al., 2012), Hanen-More than Words (Sussman, 1999), and the RUPP behavioral parent training program (Bearss et al., 2013). This practice may help to ground the concepts being discussed in vivid, real-life examples that have meaning for the parents. The use of videotaped examples also helps to promote problem-solving and generalization of parenting practices (Kaminski et al., 2008).

Consider access issues Although access to the Internet is improving, there are still significant obstacles to broadband connectivity for a substantial segment of the population in the United States of America. According to the Pew Research Foundation's 2013 report, 30% of people who earn less than \$20,000 per year are not online at all, and another 30% rely on schools or libraries for Internet access. Mobile phones are now more affordable, and more common and intervention researchers are focusing on smartphone applications, particularly when trying to reach younger parents (Baggett et al., 2010; Hall & Bierman, 2015).

Fit matters: technology is not everyone's favorite source of parenting information Technology may not be embraced by everyone, and parents need choices regarding how information about parenting is delivered to them. Hall and Bierman (2015) summarize this literature and conclude that families with higher incomes

tend to value technology-assisted interventions more than families with lower incomes (see Larose et al., 2008; Lerner et al., 2012).

Don't forget to think about the supports outside of the parent Parenting interventions are strengthened by providing consistent information and support to multiple caregivers in a child's life (McMahon & Forehand, 2003). Technology can be used to share live sessions with another caregiver (e.g., by filming sessions or maintaining archived videoconferenced sessions). It can also be used to provide asynchronous access to information through web-based self-study modules (Jang et al., 2012; Wainer & Ingersoll, 2014).

Case Study: Launching a Telehealth Service Using Videoconferencing

Implementing a telehealth program involves significant planning. In this section, we offer an overview of the implementation steps that were involved in launching a family-focused telehealth project in Colorado. Clearly, different steps may be necessary across communities, interventions, and technologies, but hopefully this will provide an illustration for the steps involved in launching a telehealth version of a clinic-based, empirically supported intervention for families of youth with ASD.

Overview

TeleCopes (Hepburn et al., 2015) is the videoconferencing version of *Facing Your Fears* (FYF; Reaven, Blakeley-Smith, Nichols, & Hepburn, 2011), a multifamily, cognitive-behavioral intervention focused on reducing anxiety symptoms in youth with ASD. FYF integrates evidence-based practices in anxiety intervention with children with educational practices for engaging youth with ASD, and the empirical support for its efficacy is growing. For example, in a randomized controlled trial that included 50 youth with ASD and significant anxiety, 78% improved significantly after FYF, as determined by clinical evaluators who were blind to the youth's treat-

ment group assignment (FYF or treatment-as-usual) (Reaven et al., 2012). Treatment gains persisted for youth who completed FYF at 12- and 24-month follow-up visits (Hepburn, Blakeley-Smith, & Reaven, 2016). As a clinic-based intervention, the reach of FYF has been limited to those families who live within driving distance of a specialized medical center. Thus, developing a feasible, technologically simple, telehealth intervention that would allow for multifamily group interaction, parent psychoeducation and coaching, and active engagement by the youth with ASD across geographic distance became a goal for the FYF team.

The initial development phase of the project took 4 months. As with the live version, *TeleCopes* was designed to be delivered to four parent-child dyads simultaneously, thus allowing for family-to-family interaction as well as clinician-to-family interaction. The *TeleCopes* intervention includes ten 1.5 h sessions, with homework assigned and reviewed during each session. Each session follows a parallel structure to the live version, including consistent schedule elements (e.g., catch-up (review of week, previous homework), new topic, activity, homework, reward, parents-only time). Visual supports are used to support concepts. Video-modeling activities are used to help parents and youth establish a common vocabulary and to generalize concepts. (For more information on the feasibility and preliminary outcomes associated with the *TeleCopes* project, see Hepburn et al., 2015.)

Implementation Steps

As you might imagine, there were lots of moving pieces to this project. In fact, in our experience, the project management skills involved in telehealth delivery were more challenging than the technical skills required. Finding support staff who can coordinate communication, disseminate program materials, handle scheduling, and guide families through any program setup will be very helpful if you intend to work with multiple families in this modality. With that in mind, here are the implementation steps suggested by our exper-

riences launching a videoconferencing intervention in rural Colorado.

Step 1: Research ethical issues and practice parameters Ethical guidelines for telehealth services are provided by the American Telemedicine Association (2015), as well as by specific disciplines (APA, ASHA). Carefully consider issues of privacy/confidentiality and other potential risks for participating families and communicate clearly with these families about the risks involved. Include statements about your intended use of technology and the limits of technology in your “permission to treat” or disclosure forms.

Step 2: Determine which technology you want to pursue Table 15.1 (presented previously) describes the features and potential uses of different platforms to consider, depending on the focus and goals of your specific parent education/support program.

Step 3: Explore options for videoconferencing from clinics to homes that are financially feasible and sustainable for your practice In some states, clinic-to-home videoconferencing is not billable (i.e., not approved for reimbursement by insurance, waivers or Medicaid). Clinic-to-clinic videoconferencing is more likely to be “billable”; however, this can also vary and requires confirmation. Thus, depending upon the laws in your state of licensure and practice, you may need to (a) collaborate with a primary care practice, mental health center, public health department, or school and ask them to host a parent group, while you lead from a distance or (b) consider if the parent education program you are delivering via videoconferencing fits billing code definitions for an educational (as opposed to therapy) service and if that service can be delivered via clinic-to-home videoconferencing.

Step 4. Explore applications/videoconferencing programs and consider project priorities In particular, consider the following parameters: (a) complexity/sophistication of program options (i.e., do you want to share video clips or just have a video chat? do you want a

program that can archive a digital video of your sessions? Do you plan to run groups or individual sessions?), (b) ease of installation and use for families, (c) availability of technical support for the therapist team, (d) cost (for your practice and per family), (e) system requirements (particularly memory and bandwidth), and (f) overall stability and reliability of the program. Talk to other professionals who have experience with different programs. Sign up for free trial periods in order to fully explore possible programs.

Step 5: Prepare therapists to communicate through videoconferencing Not all experienced therapists will be comfortable communicating with parents through videoconferencing. In our experience, some therapists needed ongoing technical assistance by an eLearning specialist, even if just delivering a webinar and not necessarily engaging in two-way interactions. Practice interacting with the technology can be critical for promoting therapist comfort with the telehealth platform. Consider convening some staff meetings via videoconferencing in order to facilitate more practice opportunities. See Table 15.2 for a partial list of communication modifications our team found to be helpful in promoting therapeutic alliance via videoconferencing.

Step 6: Whenever possible, include videoconferencing as a choice, not a sole option Consider parent’s experience and communication preference in determining intervention modality – videoconferencing is not for everyone. Provide opportunities for parents who do not use this technology often to practice in some 1:1 interactions.

Step 7: Learn about how the parents you serve currently use technology In our rural outreach videoconferencing project, we conducted a brief intake interview with participating parents specifically concerning how they used their computer (i.e., what programs they used, whether they had ever used videoconferencing before), what kind of equipment they were using (hardware and Internet connection), and how confident they felt using their computer for different purposes.

Table 15.2 Suggested modifications for interactions via videoconferencing

Challenges	Modifications for interaction
<i>Slight delay in transmission of audio</i> (i.e., timing of when a person speaks and when others can hear what is said has a 1–5 s delay)	Slow down the pace of verbal interactions and wait for others to finish talking before speaking Remind all participants to allow for wait time and introduce a visual cue (“wait” gesture) if cross talking occurs
<i>Audio quality may vary across participants</i>	Speak slowly, deliberately, and clearly. Sometimes you’ll need to speak more loudly than you would do in person; however, try to do this without seeming to shout or adding a sense of urgency to the communication. The use of headsets and microphones is very helpful here Remind families of how to change the volume settings on their end, so that if you need to speak more loudly for one family, others can dampen the sound as needed If sound issues persist within a session, consider supplementing the videoconference with a phone call to the family impacted by sound problems. This way, they remain visually present in the group and can still hear the content. Reflect content back to participant fairly frequently to make sure you have heard correctly
<i>Visual image of therapist can seem “too close for comfort”</i>	Sit back about 18 inches from the camera and monitor. Position yourself prior to initiating the call so that your head/shoulders and possibly top half of body are in view. Avoid close-ups to face
<i>Nonverbal reflective listening behaviors</i> (such as making eye contact, nodding, empathic vocalizations, and gestures) can feel “out of sync” within the interaction	Practice looking into the camera instead of on the computer screen. This is counterintuitive, because if the therapist is looking at the parent/youth on the screen, it appears that she isn’t paying attention to the person or to what is being said. Placing the camera as close as possible to the image on the screen helps, as does consciously practicing looking at the camera Prolong and even exaggerate gestures so that the timing isn’t as disjointed
<i>Awkward turn-taking in group discussions</i> (i.e., in multiple family group discussions, it can be difficult to know whose turn it is to talk)	Institute a clear routine for turn-taking and explicitly identify who is to be speaking at a given time Remind all participants to use a gesture to indicate they’d like the floor (raising hands works well)
<i>Distracting environment</i> (i.e., sounds or images behind the therapist that could distract participants)	Take time to set up the room where telehealth interactions occur. Cover windows and other distracting visuals with a dark-colored curtain, so that the participant sees the therapist only. Post “do not disturb” signs on room and in hallway

Step 8: Create technical support materials for families and therapists In our experience, we needed two sets of materials: (a) beginner’s tool kit: (i.e., initial orientation session and a visual step-by-step guide to installation and troubleshooting sound or connectivity issues) and (b) experienced users quick summary (i.e., one-page bullet-pointed list of essential info). Provide contact information for a reliable and knowledgeable person who can help families troubleshoot any problems with installing software or maintaining connectivity in sessions.

Step 9: Develop a schedule of a block of sessions, enroll an appropriate number of families, and provide clear information about

program logistics Identify an appropriate number of participating families for each session by considering your goals for the intervention and the optimal number of participants for achieving those goals. Working with two families at once poses fewer facilitation challenges for the interventionist than a group of four families; however, the inclusion of more families adds depth to the examples that will be discussed and may promote better parent-to-parent supports (Kaiser, 2011). In addition, provide the participating families with clear information about expectations for attendance, participation, and other logistics. Describe how you will help a family get caught up if they missed a session (i.e., a phone call? A handout? A brief video chat?). Although technol-

ogy can reduce difficulties with transportation in order to attend sessions, moving the intervention into the home setting may introduce other factors that impede attendance. For example, we found it helpful to talk with participating parents about a plan for keeping their children safely engaged in another activity while they are participating in the telehealth intervention.

Step 10: Convene first a videoconference Keep it brief and socially focused. Discuss the goals of the group, ground rules (including confidentiality), session routines, and procedures. Describe how you will send out materials to the group and establish a way that group members can reach you. Remind everyone of technical information and see if anyone needs assistance. Remind everyone that if their video feed isn't working, they can call into a speaker phone in your office.

Step 11: Conduct a block of sessions, checking in with participating families for feedback on their experiences with the intervention along the way As you implement your telehealth intervention, build in routines for obtaining feedback from participating families. This can be done by asking everyone how it's going during the intervention sessions or by a follow-up email or confidential survey. Revisit your goals with each family, and – just like any other form of psychosocial intervention – be ready to adjust your therapeutic strategies and foci based upon the responses of the participants.

Concluding Comments

Parent education programs are an important part of intervention for young children with ASD. Barriers to accessing evidence-based approaches are a practical problem that technological innovations have the potential to address effectively. In this chapter, we presented a synthesis of the existing literature on technological approaches to delivering parent education, noting that the findings of autism-specific intervention studies are very similar to those conducted with families of children with other developmental,

physical, or mental health challenges. This is a rapidly changing research landscape, and the programs cited herein are offered as examples, and our review is, by no means, exhaustive. Different technological applications offer different features and may be more appropriate for some uses than for others. Technological innovations in parent education and support are likely to be more effective when they are based on evidence-based practices that have been adapted in a manner that replicates the critical elements of the intervention but is flexible enough in form to fit the novel delivery medium. Approaches that include interaction appear to be more effective than approaches that are purely self-instructional and self-paced. Motivating parents to participate consistently in order to experience a meaningful amount of the target intervention is an important consideration when designing technological interventions for busy adults facing significant stressors. Technology can be used to individualize interventions and improve generalization, as with the integration of videotape reviews in many parent-training programs. It may also provide innovative ways to extend parent education and supports beyond the child's primary caregiver through asynchronous access to training materials. There are also limitations to the use of technology in parent education and support. Access is still limited for many people in poverty, and not all adults view technology favorably as a parenting tool.

From a practical, implementation perspective, integrating technology into practice involves a significant amount of planning; however, careful consideration of the steps and resources required will facilitate the process. Aspects of parent education that are taken for granted – such as the ability to communicate effectively with the parent, (listening actively, nonverbal communicative cues, coaching in the moment, and providing specific suggestions in a dignified tone) – may require careful consideration when interacting through technology. As with other clinical skills, integrating technology into parent education and support will require practice, openness to feedback, and objective, ongoing program evaluation. More studies with rigorous designs are needed to evaluate the impact

of technological innovations and investigations into uses of relatively affordable technologies, such as mobile telephone applications, and are also needed to move the field forward.

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