Consultation emerged as a systematic approach to human services in 1949 in Israel through the work of a psychiatrist, Gerald Caplan. At the time, Caplan faced the challenging task of providing mental health services to 16,000 adolescent immigrants in post-WWII Israel. Considering the large number of individuals who needed services, the geographically diverse locations in which these individuals were located, and the 1,000 initial referrals, Caplan and the members of his clinical team needed an efficient way of providing these services (Caplan, 1970). Under this pressure, Caplan and his colleagues engaged in consultation with caregivers to serve a greater number of clients. This consultation model included an indirect service delivery method resulting in a triadic relationship, which allowed a consultant (e.g. social worker, psychologist, etc.) to work with a consultee (e.g., parent, caregiver, teacher, etc.) to affect the outcomes of the client (e.g. children).

With the goal of increasing access to and efficiency of services for students and teachers, consultation became one of the school psychologist’s primary roles alongside assessment and intervention (NASP, 2010). Just after the original iteration of the Education for All Handicapped Children Act (EHA, 1975), researchers and practitioners recognized consultation as a promising intervention modality in schools and recommended its application to efficiently serve a greater number of students (Gumaer, 1980; Meyers, 1978; Reschly, 1976). Early on in the field of school psychology, individuals began to appreciate the various ways consultation enhanced school-based service delivery, with some suggesting that consultation become the first priority of the practicing school psychologist (Gibbins, 1978). In light of the growing professional obligations school psychologists faced after new federal mandates, school psychologists could facilitate team-based problem-solving, provide professional development opportunities for other school staff, and improve access to services by providing services via consultation (Berger, 1979; Individuals with Disabilities Education Act, 2004).
With regard to contemporary school psychology practice, researchers and practitioners continue to emphasize consultation as a key area of the professional role. The National Association of School Psychologist (NASP) lists consultation and collaboration as one of the ten practice domains (NASP, 2010). Additionally, a recent survey study exploring how these ten domains manifest in practice revealed the majority of the school psychologists reported that consultation was the practice area in which they felt the greatest level of competency and spent the largest proportion of their time (Bahr et al., 2017; NASP, 2010). Although several terms and specific models are described under the broader umbrella of consultation, the professional activity is ultimately unified by two central goals: enhancing skills of teachers and other school-based staff, and expanding the scope of services available to students (Nadeem, Gleacher, & Beidas, 2013; Zins & Erchul, 2002).

Consultation Conceptual Frameworks

Prior to providing an overview of technology-mediated school consultation, we would like to include a brief discussion of consultation models. Whether delivered in person or through technology, consultation is not a unitary construct. As a general model of service delivery, consultation may be further broken down into a variety of different processes, procedures, and theoretical orientations. In the interest of establishing a conceptual framework, several early articles appearing in the area of school consultation pointed out the various theoretical models of consultation, discussed the adaptability of these models to school settings, and began empirically evaluating them (Gallessich, 1976; Gibbins, 1978; White & Fine, 1976).

In one of these seminal articles, Gallessich (1976) listed and described the following models for consultation: mental health consultation, process consultation and organization development, behavioral consultation, and the advocacy model. Differentiating among these models, Gallessich suggested that models may be of differential utility based on the primary problems they address and the theoretical orientation from which the consultant is operating. Over three decades later, many different terms are still appearing in the consultation literature, including school consultation (Erchul & Martens, 2010), behavioral consultation (Bergan & Kratochwill, 1990), direct behavioral consultation (Watson & Sterling-Turner, 2008), and instructional coaching (Denton & Hasbrouck, 2009).

Although the literature has not yet established a universally accepted or agreed upon term for school consultation, adhering to a specified model offers several benefits for contemporary research and practice (Clarke, Sheridan, & Woods, 2014; Traub et al., 2017). With regard to applied research, subscribing to a specific model will provide technological procedures that may be replicated more easily. In addition, in the interest of addressing the pervasive research-to-practice gap in the field, the field of implementation science suggests the application of systematic models to bring
evidence-based practices to scale (Douglas, Campbell, & Hinckley, 2015; Forman et al., 2013; Owens et al., 2014). One model that lends itself to replicable procedures and draws upon the recommendations made by the field of implementation science is problem-solving consultation (PSC; Erchul & Ward, 2016; Frank & Kratochwill, 2014).

Moreover, as a model, PSC is well-suited for school-based application due to its broad problem-solving approach, behavioral underpinnings, and adaptability to problems across the three tiers from individual student referrals at tier 3 to systemic change initiatives. In terms of teleconsultation, the structured nature and systematic process of PSC also lends itself to remote delivery. PSC interactions through teleconsultation between the consultee and the consultant may become more efficient, and remote service provision may provide scheduling flexibility and ease. Within PSC (Kratochwill, Altschaefl, & Bice-Urbach, 2014), there are four stages conducted as three separate interviews, each of which contains specific objectives that a consultant should address.

First, in the problem identification interview (PII), the problem to be resolved as a result of consultation is specified in concrete, observable terms and data collection procedures are identified. Second, during the problem analysis interview (PAI), the parameters of the problem are examined further and an intervention is selected to address them. Following implementation and data collection, the problem evaluation interview (PEI) is conducted to evaluate the data and determine whether the plan developed is the appropriate course of action for the referral concern. At this point, if the results are favorable the intervention will be continued. However, if the targeted behavior is not responding, new information would be provided and/or a new approach may be developed, and the problem-solving process would repeat itself. Although the PSC process is guided by these three interviews, the consultant and consultee may also engage in additional, less formal conversations or meetings, especially during initial intervention implementation.

Integrating Technology in School-Based Consultation

Although the effectiveness and efficacy of consultation is substantiated by a large and longstanding body of evidence, there are clear barriers to providing traditional in-person, face-to-face consultation services (Medway & Updyke, 1985; Reddy et al., 2000). These barriers include a national shortage of qualified personnel; logistical constraints such as travel time and/or distance and additional time required on-site to perform ancillary activities such as classroom observations or performance feedback; limited teacher training on the interventions; and often inadequate ongoing support provided to teachers, which adversely impacts treatment integrity (Castillo, Curtis, & Tan, 2014; Graden, 2004; Graves, Proctor, & Aston, 2014). A consultant who engages in in-person, face-to-face service delivery can encounter a basic logistical problem of losing considerable work time in the navigation of these barriers (Simpson, 2009).
Additionally, remote and underserved areas can impose increases in travel time and in urban areas, it can be difficult to travel quickly across a large city due to congested traffic conditions. In many regions, these logistical challenges are exacerbated by the shortage of qualified service providers (Beebe-Frankenberger, 2008), and make it less likely that professionals have the capacity to engage in consultation at all. Apart from conducting the meetings associated with consultation, there are additional activities in which the consultant participates (e.g., conducting multiple classroom observations; Erchul & Martens, 2010) that also require in-person visits. These tasks and interactions are often considered critical to consultation services, especially when the consultant provides training to the consultee (Schultz, Arora, & Mautone, 2015).

Further, such ancillary activities likely require additional trips to/from schools and thus decrease the available time to engage in consultative interactions. Establishing the importance of these activities, Pas and colleagues (2015) demonstrated improved teacher implementation of an empirically based tier one class-wide intervention (Good Behavior Game) when teachers received a greater amount of interaction (i.e., contact time) with a consultant, as indicated by an intervention dosage measure. This finding suggested that the limited contact between teachers and consultants inevitably imposed by the practical barriers encountered during the provision of consultation may compromise intervention efficacy.

To navigate these barriers in the delivery of consultation services by school psychologists and related providers and meet the increasing demands for services, a growing number of researchers and practitioners have begun integrating technology into consultation service delivery (Bice-Urbach & Kratochwill, 2016; Fischer, Dart, Radley, et al., 2016; Hamren & Quigley, 2012; Sulzbacher et al., 2004). By incorporating technology into consultation, school consultants, including special educators and school psychologists, are able to circumvent many of the limitations of providing traditional in-person consultation services and serve a greater number of students as well as their teachers. Pertaining to a variety of different settings in mental and behavioral health, the American Psychological Association defines teleconsultation as the:

> provision of consultation services using telecommunication technologies, [with] telecommunication technologies including but are not limited to telephone, mobile devices, interactive videoconferencing, email, chat, text, and Internet.  

_(American Psychological Association, 2013, p. 3)_

As previously alluded to, this service delivery modality is especially beneficial for schools in remote and underserved areas or those lacking access to school consultants. Over half of all U.S. school districts, serving roughly a quarter of the nation’s student population, reside in rural areas (Aud et al., 2013). Those students, their teachers, local community stakeholders, and parents have unique educational challenges compared to non-rural areas (e.g., staffing, school infrastructure, and access to specialized services; Teigan et al., 2012). Because remote and underserved
school districts have a shortage of mental health service providers (Beebe-Frankenberg, 2008), the needs of teachers, students, and their parents alike are not being adequately met (Lee et al., 2009).

In addition, with great distances between schools and larger caseloads, consultants are tasked with serving more people and spending anywhere from 30 minutes to over an hour in transit (Clopton & Knesting, 2006). The significant costs associated with meeting these needs may reduce the overall quality of services provided by schools in remote and underserved areas. Considering the shortage of related providers in these regions, school psychologists in particular must take the initiative to bridge service gaps by incorporating state-of-the-art technology. This trend also holds true for schools in suburban and urban areas, as there is a national shortage of school psychologists (Castillo et al., 2014).

**Teleconsultation**

Although adhering to a specific model offers several benefits in the delivery of teleconsultation services, this domain of research and practice should also be conceptualized in terms of a variety of other variables. To specifically explore each of these variables in turn, we will review the published literature with respect to the acceptability, effectiveness, requirements, and financial benefits for widespread application of teleconsultation in the schools (See Table 1.1 for a review of referenced studies).

**Acceptability**

In a preliminary evaluation of the acceptability of videoconferencing as a modality for consultation, Fischer, Dart, LeBlanc and colleagues (2016) conducted an analogue study with 60 classroom teachers. Without any previous professional videoconferencing experience, teachers perceived videoconferencing as an acceptable alternative for consultation services. Once participating in a problem identification interview with the consultant, the initial interview in problem-solving consultation, the teacher’s acceptability of the modality increased. Teachers rated videoconferencing as acceptable and found videoconferencing more acceptable than in-person interviews (Fischer, Dart, LeBlanc, et al. 2016).

Although acceptable overall, the settings in which videoconferencing would be most acceptable is an area for future research. Further, this analogue approach did not evaluate acceptability within the context of an actual teleconsultation case, beyond the PII.

The acceptability of teleconsultation for the consultant is another consideration. Schultz and colleagues (2017) conducted an online conjoint-analysis survey with 62 school psychology trainees, trainers, and practitioners evaluating the situations in which school psychologists would choose teleconsultation over in-person consultation. When considering three variables thought to influence this decision,
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<tr>
<td>Alnemary et al., 2015</td>
<td>Training teachers to conduct FAs across videoconferencing</td>
<td>Laptop, desktop computer, multimedia projector, Web camera, microphone</td>
<td>Skype, PowerPoint</td>
<td>All participants met mastery criteria during some sessions, with training conducted over 8,000 miles apart</td>
<td>8,333 miles</td>
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<tr>
<td>Bassingthwaite et al., 2018</td>
<td>School-Based Behavior Teams in Functional Behavior Assessment implemented a 3-phase project</td>
<td>Wireless video camera, video monitor, smartphone, laptop computer</td>
<td></td>
<td>69 functional analyses conducted, 59 functional analyses with interpretable results, and greater than 70% with differentiated results</td>
<td>Undisclosed</td>
</tr>
<tr>
<td>Bice-Urbach et al., 2017</td>
<td>Summary and recommendations for school-based teleconsultation</td>
<td>iPad, iMac desktop, Dell laptop</td>
<td>Skype</td>
<td>Following teleconsultation, a significant reduction of problem behavior was observed for all participants</td>
<td>N/A</td>
</tr>
<tr>
<td>Bice-Urbach et al., 2016</td>
<td>Use problem-solving consultation over teleconsultation</td>
<td>iPad, Dell laptop</td>
<td>Skype</td>
<td>Following teleconsultation, a significant reduction of problem behavior was observed for all participants</td>
<td>Undisclosed</td>
</tr>
<tr>
<td>Fischer et al., 2017</td>
<td>Compare PIIIs conducted face-to-face with videoconferencing</td>
<td>iPad</td>
<td>FaceTime</td>
<td>Problem-solving consultation interviews conducted over videoconferencing may result in comparable outcomes</td>
<td>0 miles</td>
</tr>
<tr>
<td>Fischer, Dart, LeBlanc, et al., 2016</td>
<td>Evaluating the acceptability of videoconferencing in schools</td>
<td>iPad</td>
<td>FaceTime</td>
<td>Teachers found tele-consultation acceptable</td>
<td>0 miles</td>
</tr>
<tr>
<td>Author(s), Year</td>
<td>Study Title</td>
<td>Hardware</td>
<td>Software</td>
<td>Summary of Results</td>
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<tr>
<td>Fischer, Dart, Radley, et al., 2016</td>
<td>Evaluating the effectiveness and acceptability of teleconsultation in schools</td>
<td>Digital video cameras, laptop computers, desktop computers, iPad</td>
<td>Vsee, Box</td>
<td>Teleconsultation resulted in improved student outcomes, and was an acceptable medium for service delivery</td>
<td>Undisclosed</td>
</tr>
<tr>
<td>Fischer, Schultz, et al., 2016</td>
<td>Critical review of teleconsultation software</td>
<td>Digital video cameras, laptop computers, desktop computers, iPad</td>
<td>Adobe Connect, Cisco WebEx, FaceTime, Polycom, Skype</td>
<td>Critical features include on-screen document sharing, group videoconferencing, instant messaging, recording capabilities, integrated cloud storage, and legal compliance</td>
<td>N/A</td>
</tr>
<tr>
<td>Frieder et al., 2009</td>
<td>Examining the feasibility of web-based teleconsultation in school settings</td>
<td>Two cameras, a digital video recorder (DVR), a monitor for the DVR</td>
<td>Remote access software</td>
<td>School staff implemented FA procedures with high levels of procedural fidelity</td>
<td>100 miles</td>
</tr>
<tr>
<td>Gibson et al., 2010</td>
<td>Using videoconferencing to deliver behavioral interventions</td>
<td>Laptop, webcam, wireless microphone system</td>
<td>Skype</td>
<td>Problem behavior decreased</td>
<td>80 miles</td>
</tr>
<tr>
<td>Ihorn et al., 2018</td>
<td>A short-term teleconsultation program to support students with visual impairments</td>
<td>Laptop computers, web cameras</td>
<td>Zoom Meeting, Edmodo</td>
<td>Families and school staff reported high levels of satisfaction with the students’ experiences</td>
<td>Undisclosed</td>
</tr>
<tr>
<td>Machalicek, O’Reilly, Chan, Lang, et al., 2009</td>
<td>Conducting FAs through videoconferencing and developing behavior support plans</td>
<td>Laptop computers, web cameras</td>
<td>iChat videoconferencing software</td>
<td>FAs were feasible, and function based interventions reduced challenging behavior</td>
<td>0 miles</td>
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<tr>
<th>Article</th>
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<tbody>
<tr>
<td>Machalicek, O’Reilly, Chan, Rispoli et al., 2009</td>
<td>Support teachers conduct preference assessments</td>
<td>MacBook laptop computer, external iSight camera, iMac desktop computer, Jabra Bluetooth headset</td>
<td>iChat videoconferencing software</td>
<td>Teachers can conduct preference assessments with high fidelity, and effective interventions can be developed utilizing the results</td>
<td>7 miles</td>
</tr>
<tr>
<td>Machalicek et al., 2010</td>
<td>Providing feedback via telehealth immediately after FA implementation</td>
<td>Laptop computer, web camera, desktop computer with a built-in camera</td>
<td>iChat videoconferencing software</td>
<td>Procedural fidelity improved, and participants reported that the intervention was socially acceptable</td>
<td>Undisclosed</td>
</tr>
<tr>
<td>Rule et al., 2006</td>
<td>Technology-mediated consultation to assist a rural student with severe disabilities</td>
<td>Polycom System, telephone</td>
<td></td>
<td>Teleconsultation was beneficial to provided follow-up feedback to school staff in a rural school, yet technical barriers can interfere with success</td>
<td>Undisclosed</td>
</tr>
<tr>
<td>Rule et al., 1988</td>
<td>Comparison of the costs of an individualized in-person training to using two-way video and electronic mail</td>
<td>Apple Computer, television monitors, cameras, microwave system</td>
<td>Special Net Bulletin Board, electronic mail</td>
<td>Initial costs were higher, yet the costs decrease over time</td>
<td>Up to 300 miles</td>
</tr>
<tr>
<td>Schultz et al., 2017</td>
<td>When is teleconsultation acceptable to teachers?</td>
<td></td>
<td></td>
<td>Commute time is the greatest factor to use teleconsultation, followed by problem severity and consultee familiarity</td>
<td>N/A</td>
</tr>
<tr>
<td>Stowitschek et al., 1986</td>
<td>In-service training via telecommunications</td>
<td>Microwave telecommunications system, two-way interactive television</td>
<td>Special Net Bulletin Board, electronic mail</td>
<td>Teachers demonstrated accuracy in the development of procedures taught through the microwave system</td>
<td>275 miles</td>
</tr>
</tbody>
</table>
commute time was the greatest factor where school psychologists were more likely to use teleconsultation with greater distance to their consultee. Following commute time, problem severity and consultee familiarity with the technology influenced school psychologists’ decision to use teleconsultation. This is preliminary evidence that although consultants find teleconsultation acceptable, there are situations, including travel time, consultee comfort with technology, and severity of problem behavior, that influence the decision to use teleconsultation.

Few studies have completed cases completely conducted over teleconsultation. In the application of teleconsultation in an applied manner, high rates of acceptability for the modality are maintained. Fischer, Dart, Radley, and colleagues (2016) evaluated the acceptability of the technology and the intervention following teleconsultation with three teacher-student dyads. Teachers viewed the intervention as acceptable, as well as the use of technology (i.e., teleconsultation), indicating that teachers were comfortable participating in these services over videoconferencing. Bice-Urbach and Kratochwill (2016) found similar results regarding the acceptability of teleconsultation following intervention. In an evaluation of teleconsultation with six students in rural communities, Bice-Urbach and Kratochwill (2016) had teachers rate acceptability and feasibility of the modality before and after intervention. At baseline, the teachers reported teleconsultation to be feasible and acceptable, yet following intervention there was an increase in their ratings, indicating they found it acceptable and feasible following consultation. Following intervention, the teachers also rated the intervention as highly effective and acceptable, further supporting the use of teleconsultation for consultative services to rural communities.

For particular underserved communities, teleconsultation has applications to ameliorate educational disparities. Ihorn and Arora (2018) evaluated the acceptability of an innovative model of teleconsultation to serve students with visual impairments in the classroom. The students, teachers, and families participated in a short-term teleconsultation program with consultants with expertise in visual impairments to support students educated in their home communities. Following the program, families and school staff reported high levels of satisfaction with the students’ experiences and support from the program. Qualitatively, the authors report that parents and school staff endorsed themes related to student growth. Staff and families report positive student outcomes from participating in the program and the teleconsultation model allowed for greater access to educational opportunities.

**Effectiveness**

In an analogue study of effectiveness of teleconsultation, Fischer and colleagues (2017) compared problem identification interviews (PIIs) conducted over videoconferencing to in-person using the consultation analysis record (CAR; Bergan & Tombari, 1975). Sixty teachers participated in a simulated PII both in-person and
over videoconferencing. The CAR identifies significant process and content variables by coding interview verbalizations. Across the CAR indices of effectiveness, videoconferencing was significantly higher for content relevance, process effectiveness, and interview control but lower for the index of content focus. Previous research using the CAR has indicated that higher rating on the CAR indices have been associated with positive outcomes in consultation (e.g., Bergan & Tombari, 1975, 1976; Busse et al., 1999; Martens et al., 1992). Thus, these results show promise that problem-solving consultation interviews conducted over videoconferencing may result in comparable, or greater, outcomes.

In schools, teleconsultation procedures have been used to support teacher training and implementation of various procedures such as functional analyses (Alnemary, et al., 2015; Machalicek, O’Reilly, Chan, Lang, et al., 2009; Machalicek, et al., 2010), functional communication training (Gibson et al., 2010), incidental teaching (Stowitschek, Mangus, & Rule, 1986), preference assessments (Machalicek, O’Reilly, Chan, Rispoli, et al., 2009), differential reinforcement procedures (Fischer, Radley, Dart, et al., 2016), and behavior support plans to reduce disruptive behavior (Bice-Urbach & Kratochwill, 2016). While the procedures varied across studies where some took a consultee-centered focus and others took a case-centered approach, teleconsultation has yielded improved outcomes in these applied studies. For instance, Machalicek, O’Reilly, Chan, Lang, and colleagues (2009) focused on the consultee by training school staff to conduct functional analyses using videoconferencing technology. Staff were able to implement procedures with fidelity, and the resulting data were successfully used to develop an effective behavior plan for two students with autism spectrum disorder.

Preliminary efforts in teleconsultation have been benefiting teachers in rural schools since the mid 1980s. Consultants utilized a two-way audio/video communication platform and electronic mail to teach staff in rural schools how to implement incidental teaching (Stowitschek, et al., 1986). The agenda for the teleconsultation session was sent through electronic mail the day before using audio/video microwave transmissions to consult with school staff members. Stowitschek and colleagues found that when repeated in-person consultation appointments across great distances were not feasible, teleconsultation allowed for ongoing consultation relationships with high quality training and feedback to staff members.

Some students with disabilities in remote communities have school professionals lacking expertise to meet their individualized education needs. Rule and colleagues conducted a one-day in-person training with continued follow-up conducted by teleconsultation. Although various technical challenges arose (e.g., poor audio/video quality), alternative communication options such as calling on the telephone supported ongoing teleconsultation relationships. Further recommendations included clear expectations for consultation defined in writing and providing technical support for both the consultant and consultee in the event of challenges (Rule et al., 2006).
Teleconsultation supported three pre-service teachers’ implementation of preference assessments with children with autism (Machalicek, O’Reilly, Chan, Rispoli, et al., 2009); all three pre-service teachers were able to implement the procedure with 100% fidelity. Teachers were provided with a task analysis of procedures and asked to practice those procedures prior to the teleconsultation meeting. During the teleconsultation meeting, the pre-service teachers used headphones to receive immediate corrective feedback or behavior-specific praise following each trial. The pre-service teachers reported this to be a relatively unobtrusive procedure that provided helpful feedback on performance.

Two examples of a case-centered approach include Bice-Urbach and Kratochwill (2016) and Fischer, Radley, Dart, and colleagues (2016). In both studies, the consultants used teleconsultation to conduct problem-solving consultation from problem identification through treatment evaluation. Bice-Urbach and Kratochwill (2016) engaged in problem-solving consultation with six teachers in a rural community who were requesting help with students who engaged in challenging behavior. All six teachers conducted five structured interviews over teleconsultation. As a result of teleconsultation, there was strong evidence of a reduction of disruptive behavior.

Fischer, Dart, Radley, and colleagues (2016) received three student-teacher dyad referrals for consultation due to high rates of problem behavior observed in the classroom. Interventions were successfully identified and evaluated using a combination of real-time and stored video observations. The interventions included differential reinforcement procedures designed to increase academic engaged time for two participants and decrease body rocking for the third. The interventions were successful at improving student outcomes, across behaviors.

Where some studies provided initial consultation meetings in person (e.g., Gibson et al., 2010), others implemented the entire consultative relationship over remote technologies (e.g., Machalicek, O’Reilly, Chan, Rispoli, et al., 2009). A consideration of conducting the entire process over teleconsultation is the capacity to handle unexpected problem behavior in the school setting. As a result, Machalicek, O’Reilly, Chan, Lang, and colleagues (2009) conducted the functional analyses over teleconsultation from within the same building. Particularly in the implementation of functional analyses with students with severe problem behavior, experienced supervisors may need to be available in the event of adverse outcomes.

Teleconsultation can be conducted over great distances with high fidelity. Alnemary and colleagues (2015) demonstrated that teleconsultation to train teachers in functional analysis procedures can be achieved over 8,000 miles from the consultants. In this study, consultants and consultees were in different countries ten time zones apart. Although there was a great distance between the consultant and consultees, all participants acquired some skills towards mastery following a brief group training and one individualized feedback session.

Bassingthwaite and colleagues (2018) utilized a multi-phase model to facilitate independent practice of school-based professionals in conducting functional
behavior assessments. The consultants initiated with in-person consultation as consultees build initial skills. Consultees had little previous experience with the assessments and required modeling of requisite skills. As consultees demonstrated increased skills and students engaged in manageable problem behavior, the consultants progressed to an on-site teleconsultation model where consultees could show independence in conducting target skills. Thus, the consultant was still on-site if the consultee needed increased support. This allowed for the necessary feedback and support from the consultant while also reducing reactivity of the student from having multiple observers.

Following, a third phase, remote teleconsultation, was used to support the maintenance of consultee skills. Over six years, this model facilitated 69 functional analyses, 59 functional analyses with interpretable results, and greater than 70% with differentiated results in the school setting (Bassingthwaite et al., 2018). The application of teleconsultation continues to increase in the literature with growing support for its effectiveness. As teleconsultation research expands, technological advances continue to grow in parallel, which provides numerous options for researchers and practitioners to evaluate the utility and acceptability of each.

**Requirements**

Across studies, various software platforms and hardware were used for teleconsultation. As a result of the wide variability of technology used, and limited guidance, practitioners interested in teleconsultation are often unclear how to best meet their consultees’ needs. As a result, Fischer, Schultz, Collier-Meek, Zoder-Martell, and Erchul (2016) conducted a systematic review of videoconferencing software for use during school consultation. The reviewers found that, at the time, five software platforms had been used in two or more empirical articles. As many publicly available software platforms change over time, the review focused on six features of the identified software relevant to teleconsultation: on-screen document sharing, group videoconferencing, instant messaging, recording capabilities, integrated cloud storage, and legal/ethical compliance (Fischer, Schultz, et al., 2016).

On-screen document sharing allows participants to view and edit documents collaboratively. This allows consultants to share graphs and describe results visually while communicating with the consultees. When consulting remotely, multiple members may need to join the video such as parents or other school personnel. Some software platforms allow three or more participants in a group videoconference. With regard to instant messaging capabilities, this function encourages clear communication. During observations or meetings when using two-way audio is not always feasible or effective at communicating, instant messaging allows for instant written messages to bridge communication gaps with participants. Recording capabilities provide consultants opportunities to record meetings and observations for future review. Cloud storage capabilities provide remote access to shared documents.
including data, behavior plans, and other materials used in teleconsultation. Although documents can be shared across other platforms such as e-mail, cloud storage allows remote access for all participants. Finally, Fischer, Schultz, and colleagues (2016) reported the legal compliance of software is critical to use in school-based teleconsultation. Client confidentiality is of utmost importance; following the guidelines of the Health Insurance Portability and Accountability Act (HIPAA, 2007), and the Family Educational Rights and Privacy Act (FERPA, 1997), client information must be protected.

A variety of hardware requirements are necessary for an effective teleconsultation relationship. A camera, microphone, video screen, speaker, and Internet connection are minimally required to engage in a two-way audio/video teleconsultation. There are constant developments with both software and hardware, resulting in new options to purchase, yet often, the newest hardware is not necessary for an effective teleconsultation. Gibson and colleagues (2010) used a 9-year-old webcam that was sufficient to facilitate the consultative process. Additionally, many classroom computers have the basic computing power to run videoconferencing software. Further, in place of speakers, headphones with a microphone can be used for consultation meetings, and when used reduces audio feedback. (Bice-Urbach, Kratochwill, & Fischer, 2017). Most laptops, tablets, and smartphones have all the required hardware to have an effective teleconsultation relationship.

**Financial Benefits**

Although acceptability and effectiveness are important considerations when incorporating teleconsultation into everyday practice, the monetary requirements will be an important discussion for school psychologists considering incorporating technology into the existing consultation framework. In an economic analysis of conducting in-service training through teleconsultation, Rule, DeWulf, and Stowitschek (1988) compared the costs of an individualized in-person training to using two-way video and electronic mail. For consultee-centered consultation conducted in rural locations, Rule and colleagues (1988) found a significant reduction in cost for providing services overall when conducting services using two-way video and electronic mail. The initial costs for the project were higher, as this included the expense to purchase and set up the equipment, yet with continued use, the costs decreased as the equipment can continue to be used.

In a more contemporary discussion of the financial benefits of teleconsultation, Gibson and colleagues (2010) identified that by using already existing technology (e.g., classroom computers) and freely available software, the initial set-up expenses that can be prohibitive to many schools are reduced. Further, travel-related expenses are reduced when utilizing already existing technology in the schools for teleconsultation as there would be a reduced need for in-person meetings.
Additionally, there is an increased saving throughout the application of teleconsultation with reduced travel expenses. The time and costs to travel in person are removed. These expenses can reduce the likelihood for remote schools to receive in-person consultation services (Rule, et al., 1988). Gibson and colleagues (2010) found that by using videoconferencing to provide consultative services, they saved 36 hours of travel time and 1920 miles driven. Further, Bassingthwaite and colleagues (2018) found that conducting sessions over teleconsultation compared to in-person saved $12,448 in mileage and travel time. This figure did not include lodging and meal reimbursement, which are often needed for extended consultation trips.

**Implementation Recommendations and Guidelines**

For school psychologists and related school-based practitioners, consultation often represents a primary professional responsibility. Although this indirect form of service delivery may expand student and teacher access, there are still several logistical constraints that limit their ability to engage in consultation. These barriers include personnel shortages, travel distance, and rapidly increasing caseload volumes, issues that may be more acute in remote and underserved areas (Castillo, Curtis, & Tan, 2014; Castillo et al., 2016). Solutions to these practical problems are offered by teleconsultation, integrating various forms of technology to provide consultation services remotely. Current findings in the literature discussed in this chapter suggest that teleconsultation is generally acceptable, effective, and associated with significant reductions in cost.

Despite these numerous benefits, a few cautions should be mentioned as professionals and stakeholders assess the utility of implementing teleconsultation. Some consideration in the use of teleconsultation is the severity of problem behavior, and the baseline skill level of the consultee as well as their experience using telehealth technology (Bassingthwaite, et al., 2018; Bice-Urbach, Kratochwill, & Fischer, 2017; Schultz, et al., 2017). With regard to more severe problem behavior, skilled consultants should consider in-person consultation or on-site teleconsultation (e.g., Bassingthwaite, et al., 2018). This in-person contact may be especially necessary to model more complex intervention-related behaviors such as response blocking or other crisis responses. However, even if the presenting behavior is more intense with regard to its impact on the environment, teleconsultation may still be appropriate if the teachers and paraprofessionals involved have a strong background implementing behavioral interventions.

Furthermore, in the adoption of teleconsultation, schools must anticipate and work towards ameliorating the technological setbacks that may arise. To prevent technical difficulties, it is critical to conduct training on the technology, prior to engaging in consultative services. Bassingthwaite and colleagues (2018) recommend testing the connection and technology the day prior to use for any assessment and observation to reduce technical difficulties during assessment. Further, providing
documentation on how to troubleshoot common technical difficulties could increase teacher comfort with the technology. Further, consultees require knowledge regarding the equipment and teleconsultation process so that consultants and consultees can effectively interact (Bice-Urbach, Kratochwill, & Fischer, 2017).

Case Example

Wendy is a school psychologist in a rural school district serving three elementary schools. The majority of her work is school-based consultation to support students in classrooms across the three schools. Each school she serves is greater than a 45-minute drive from the others, limiting her ability to see students and teachers in-person across schools in one school day. In addition to these practical constraints, each of the three schools have recently seen a rise in behavior referrals for students who are currently receiving tier two interventions (e.g., Check-In/Check-Out or small group social skills instruction). Further, in two of the schools, the staff turnover rate is about 40%, with about 20% of the new hires within their first three years of teaching.

As a result of these competing demands, Wendy is unable to meet in person for all requested consultation meetings. Though she has limited experience with telehealth technologies, apart from videoconferencing with family and friends, she recently came across a journal that discussed school-based teleconsultation, presenting a study that found it to be an acceptable and effective method for providing school-based services. Wendy reasoned teleconsultation had several benefits to offer the school district she worked in but was not sure where to begin establishing the infrastructure and getting the process off the ground. She decided to reach out to professionals with competencies in school-based teleconsultation, starting with the authors of the journal article.

The author of the article was excited to help her bring teleconsultation to her practice setting and assisted her in identifying software and hardware requirements with regard to obtaining the basic infrastructure to begin service delivery through this modality in her district. She also spoke with the author of the article further about the rationale for the novel consultation approach, providing specific cost comparisons and building the case to expand this model of practice. Armed with this information, Wendy set up a meeting with her school district in order to present the significance of a need for teleconsultation service delivery as well as the specific materials and methods required to establish it. By the end of the meeting, Wendy hoped the district would be willing to provide the funds to purchase the equipment.

Although the district was reticent at first, they did see the need to expand access to services for more students and teachers in their district. Thus, they determined they would be willing to move forward in establishing teleconsultation practice. Wendy set a follow-up meeting with them in order to identify school-based resources to meet the practice requirements from a technological and financial perspective. At that point, it was decided that Wendy’s three schools
would serve as pilot schools through which the district could learn more about this process and determine whether they wished to equip all schools for teleconsultation. Once all devices had been purchased and established, Wendy was able to collaborate with her school personnel to develop the teleconsultation procedures in order to provide comprehensive training to the staff.

Wendy led an in-service training for all three schools in order to describe the teleconsultation process, inform teachers of how they could check out a device from the media center if they wished to meet with her or another related service provider, and how they should proceed with setting up those meetings. Next, Wendy explained how the problem-solving process functions, from the initial referral, to a follow-up meeting in which they would evaluate outcomes and determine whether the intervention implemented had produced the desired result.

Upon completion of the in-service training, Wendy received her first referral for teleconsultation. The referring teacher was a third-grade general education teacher having difficulty with the behavior of a number of students throughout the day. Wendy proceeded to schedule and conduct the problem identification interview with the teacher in order to further explore the referral concern and environmental factors. Wendy was able to collaborate with the teacher in order to determine a feasible data collection system and provide explanations and examples of data collection through screen sharing and modeling. Wendy then established times to conduct remote classroom observations and continue data collection procedures. Wendy provided the teacher with instruction regarding placement of the technology for the most appropriate observation angle and least adjustment needed.

After the initial data were collected, the teacher was able to share them with Wendy prior to their next meeting. At that point, Wendy was able to work with the teacher to analyze the problem and determine the components of tier 1 instruction currently being implemented in the classroom. Next, Wendy developed a treatment plan including a group contingency intervention, the Good Behavior Game. This intervention is designed to improve opportunities to respond during lessons, increase the rate of positive feedback provided to students, and reduce the amount of attention provided contingent upon problem behaviors. After developing this plan, Wendy met virtually with the teacher to first explain the Good Behavior Game to them, model it, and then ask them to practice implementing it while she provided corrective feedback. Once the teacher was able to deliver the intervention accurately, they agreed upon the first day of implementation in the classroom, and Wendy informed the teacher that she would be overseeing remotely for a designated time that day, and that she would be available to answer any questions that arose.

Additionally, after this first day, Wendy continued to observe remotely at random times during the following few weeks. At her next meeting with the teacher, she provided substantive performance feedback, informing the teacher of the areas in which they were delivering the intervention as planned, as well as
what additional steps they could take to increase the intervention’s fidelity. Wendy also informed the teacher they were delivering the intervention with adequate integrity, as at least 80% of the intervention components were consistently being implemented. Due to these high rates of integrity, Wendy informed the teacher that she would continue checking in periodically and encouraged them to continue implementing the Good Behavior Game. After this first case, Wendy began to work with many other teachers to improve classroom practices, as well as implement interventions for individual students. In the interest of building capacity, she began to empower teachers as leaders, and facilitate systems of support with her three schools. After establishing this infrastructure in her schools, Wendy went on to roll out teleconsultation for other schools in her district.

Conclusion

With these implementation guidelines in mind, teleconsultation is a growing area of practice and research positioned to improve outcomes for untold numbers of teachers and students. As researchers and practitioners continue exploring this area, it is important to recall the benefits of subscribing to a specific model and work towards establishing a teleconsultation infrastructure, especially in remote and underserved areas. In future decades as the application of teleconsultation increases, school-based mental and behavioral health services may have the potential to improve dramatically with regard to access to and scope of services, ultimately narrowing the research-to-practice gap and helping more students, teachers, and parents.

References


