

# Using Videoconferencing to Provide Psychological Services to Rural Children and Adolescents: A Review and Case Example

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Children and adolescents living in rural areas have difficulty accessing psychological services due to a lack of psychologists and other behavioral health professionals, especially those with expertise in treating youth. Telepsychology helps bridge this access gap. This article extends evidence supporting videoconferencing for psychological assessment and treatment in adults to support telepsychological treatment for youth. In addition, the basic components needed to begin and sustain a telepsychological practice are explored. Finally, a case example of an adolescent presenting with depression and disordered eating illustrates the practice of, and ethical standards needed for, telepsychology. Future technologies and applications around telepsychology are also discussed.

## INTRODUCTION

Children and adolescents living in rural areas have difficulty accessing psychological services due to a lack of psychologists and other behavioral health professionals, especially those with expertise in treating youth. There has been a 7.3% decline in the number of licensed social workers in rural areas (National Rural Health Association, 2008) and an uneven number of psychologists in rural areas compared to urban settings. Specifically, there are approximately 16 psychologists per 100,000 residents in rural areas compared to approximately 39 psychologists per 100,000 residents in urban/suburban areas (American Psychological Association [APA], 2007). In addition, other barriers often prevent rural youth from presenting to face-to-face clinics including distance, cost of transportation, low income and/or inadequate health insurance, and confidentiality concerns from living in small communities (Larson & Corrigan, 2010; Nelson & Bui, 2010; Pullmann, VanHooser, Hoffman, & Heflinger, 2010).

Telepsychology, or psychological services delivered by videoconferencing, helps bridge this access gap. Videoconferencing is the real-time, synchronous

transmission of digital images and audio signals between individuals or groups for the purpose of delivering clinical and educational services (Myers & Turvey, 2013; Nelson, Bui, & Velasquez, 2011). Telepsychological practice is burgeoning, as evidenced by the increase of psychologist' use of videoconferencing from 2% to 10% from 2000 to 2008 (APA, 2010). However, there is a paucity of published child and adolescent telepsychological studies, as recently reviewed by Slone, Reese, and McClellan (2012). Also, today's youth have more experience and greater proficiency with technology (Dunstan & Tooth, 2012). They perceive technology as being integral to their daily lives and are proud of their high level of technoliteracy, thus creating an ideal situation for capitalizing on technology as a platform for remote service delivery (Fitton, Ahmedani, Harold, & Shifflet, 2013).

Herein, we discuss the importance of psychological services for rural youth from a health services approach. We extend evidence supporting videoconferencing for psychological assessment and treatment in adults to support telepsychological treatment for youth (see also Backhaus et al., 2012). We then detail the basic components needed to begin and sustain a telepsychological practice whereby the telepsychologist connects to rural youth at their local clinic, be it a hospital, health clinic, nursing facility, or school. At this time, telepsychology services to the home are not reimbursable, and the potential for safety issues in unsupervised settings requires

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more extensive preparation, such as a predetermined safety plan (Luxton, Sirotin, & Mishkind, 2010). Through the use of a case example of an adolescent presenting with depression and disordered eating, we illustrate the practice of, and ethical standards needed for, telepsychology based on a rural needs-driven theoretical framework (Shore & Manson, 2005). This case example is one of hundreds of patients seen yearly through telepsychology clinics at the University of Kansas Center for Telemedicine and Telehealth (Nelson & Velasquez, 2011). Finally, future technologies and applications around telepsychology are discussed.

#### EVIDENCE SUPPORTING TELEPSYCHOLOGICAL ASSESSMENT

Psychological assessment over the videoconferencing system is feasible and accurate across a variety of adult populations and disorders (Godleski, Nieves, Darkins, & Lehmann, 2008; Jones, Johnston, Reboussin, & McCall, 2001; Kobak, 2004; Lexcen, Hawk, Herrick, & Blank, 2006; Nieves, Candelario, Short, & Briscoe, 2009; Porcari et al., 2009; Shore, Savin, Orton, Beals, & Manson, 2007). Measures commonly used by psychologists have been validated for the telepsychological setting, such as the Structured Clinical Interview for *DSM-IV* (First, Spitzer, Gibbon, & Williams, 1996); the Depression Anxiety Stress Scales (Dunstan & Tooth, 2012); the Brief Psychiatric Rating Scale (Jones et al., 2001; Ruskin et al., 1998; Shore et al., 2007); and diagnosis-specific rating scales such as the Yale–Brown Obsessive–Compulsive Scale (Goodman et al., 1989), Hamilton Anxiety Rating Scale (Hamilton, 1959), Hamilton Depression Rating Scale (Hamilton, 1960), Montgomery–Asberg Depression Rating Scale (Davidson, Turnbull, Strickland, Miller, & Graves, 1986), and the Clinician–Administered PTSD Scale (Blake et al., 1995). Psychological assessment over videoconferencing has yielded similar results as face-to-face settings for depression (Kobak, Williams, Jeglic, Salvucci, & Sharp, 2008), posttraumatic stress disorder (PTSD; Porcari et al., 2009), obsessive compulsive disorder (Himle et al., 2006), substance abuse (Kirkwood, Peck, & Bennie, 2000), and autism spectrum disorders (Reese, Slone, Soares, & Sprang, 2012). Given the lack of psychologists in rural areas, the ability of the telepsychologist to provide assessment services over videoconferencing is even more critical.

To our knowledge, there are no randomized trials specifically comparing face-to-face and videoconferencing psychological assessment for youth. However, a recent study compared face-to-face and videoconferencing modalities to assess neurological status in rural youth experiencing early psychosis and found that videoconferencing produced higher ratings than the

face-to-face assessments, and that participants were satisfied with the videoconferencing modality (Stain et al., 2011). We hypothesize that telepsychological assessment for rural youth would be as feasible as adult assessment because diagnostic interviews and psychometric measures are similarly structured across the age range. For example, the Children’s Yale–Brown Obsessive Compulsive Scale and the adult-oriented Yale–Brown Obsessive Scale share the same format, but the Children’s Yale–Brown Obsessive Compulsive Scale is modified in terms of developmentally appropriate language and examples (Merlo, Storch, Murphy, Goodman, & Geffken, 2005). However, there is a need for further examination of similarities and differences specific to telepsychology practice. See Table 1 for a summary of studies using videoconferencing for assessment.

#### EVIDENCE SUPPORTING TELEPSYCHOLOGICAL TREATMENT

As with psychological assessment, a key component to developing sound telepsychological practice is taking the best strategies available in the face-to-face setting and applying these evidence-supported approaches over videoconferencing. The majority of telepsychological publications include case reports or programmatic descriptions (Richardson, Frueh, Grubaugh, Egede, & Elhai, 2009), but publications involving evidence-based treatment delivered via videoconferencing are increasing (Mitchell et al., 2008; Morland, Greene, Rosen, Mauldin, & Frueh, 2009; Richardson et al., 2009). There is growing evidence from randomized trials that videoconferencing interventions yield similar results as face-to-face encounters across disorders such as depression (Morland et al., 2011), PTSD (Germain, Marchand, Bouchard, Drouin, & Guay, 2009; Morland et al., 2010; Thorp, Fidler, Moreno, Floto, & Agha, 2012), anxiety (Bouchard et al., 2004), eating disturbances (Mitchell et al., 2008), addictions (Baca & Manuel, 2007), and mixed diagnoses (Griffiths, Blignault, & Yellowlees, 2006; King et al., 2009).

There is less information regarding the feasibility of videoconferencing for delivering psychological treatment to youth. This is acknowledged in a recent review by Slone et al. (2012), but preliminary studies using videoconferencing, especially with rural youth, demonstrate positive findings. The earliest known study using this modality was a small pilot conducted by Nelson, Barnard, and Cain (2006). The eight-session CBT treatment for 28 children diagnosed with depression involving caregivers took place either face-to-face or via videoconferencing. All elements of the CBT treatment were successfully implemented over videoconferencing per psychologist and client/family reports, including

TABLE 1  
Summary of Studies Using Videoconferencing to Provide Psychological Services

Reference	Sample Description	Sample Size	Study Design	Study Purpose	Outcomes
Baca & Manuel, 2007	Adult (RURAL) Age: $M = 36.6$	30	Descriptive	Satisfaction with technology for treating problem drinking	No differences between 3 groups (F2F vs. Phone vs. VC). VC preferred over telephone.
Bouchard et al., 2004	Adult (RURAL) Age (remote): $M = 38.8$ Age (local): $M = 37.1$	21 (10 local, 11 remote)	Pre-Post	Panic disorder with Agoraphobia	Significant reduction in symptoms for both groups
Germain et al., 2009	Adult (RURAL) Age: Between 18 and 65	46	RCT (VC vs. F2F)	PTSD	Significant decline in symptoms in both conditions and no difference between groups
Griffiths et al., 2006	Adult (RURAL) Age: $M =$ not reported	15	Pre-Post	Depression and/or anxiety	Significant improvement of depression and anxiety symptoms on the mental health inventory
Himle et al., 2006	Adult (RURAL) Age range = 19–39	3	Pre-Post	OCD	All participants experienced substantial improvement
Jones et al., 2001	Adult Age: $M = 66.5$	30	VC vs. F2F	Assessment of elder mental health	VC is reliable method to examine mental status and behavior among elders but, visual ratings are not as reliable using VC
King et al., 2009	Adult Age: $M = 40.6$	50	RT (Internet VC vs. F2F)	Substance abuse	Patients in both conditions responded favorably to treatment and rated high satisfaction with treatment across conditions
Kirkwood et al., 2000	Adult Age: $M = 46$	27	RT VC vs. F2F	Assessment of alcohol abuse	Satisfaction was high for the technology, and for most measures, scores achieved using VC was similar to F2F
Kobak et al., 2008	Adult (RURAL) Age: $M = 44$	35	RT (VC vs. F2F)	Assessment of depression	No significant difference in mean depression scores between groups
Kobak, 2004	Adult Age: $M = 37$	42	RT (VC vs. F2F)	Assessment of depression	Similar HAMD scores between groups
Lexcen et al., 2006	Adult Age: $M =$ not reported	72	RT (VC vs. F2F)	Forensic evaluation of severely mentally ill	No significant difference in intraclass correlations (.69–.82) between the conditions
Mitchell et al., 2008	Adult (RURAL) Age: $M$ (F2F) = 29.6; (VC) = 28.4	128	RT (VC vs. F2F)	Bulimia nervosa	Outcomes similar between groups
Morland et al., 2010	Adult (RURAL) Age: $M$ (F2F) = 54.7; VC = 54.8	125	RCT (VC vs. F2F)	Anger management/PTSD	Both groups had significant reductions in anger
Morland et al., 2011	Adult (RURAL) Age: $M = 54.7$	125	RT (VC vs. F2F)	Therapist adherence to CBT	Therapist adherence to CBT similar across delivery modalities
Nelson et al., 2003	Youth Age: $M = 10.3$	28	RCT (VC vs. F2F)	Depression	CBT yielded sig. improvement for depression in both conditions. VC condition had faster remittance
Porcari et al., 2009	Adult Age: $M =$ not reported	20	RT (VC vs. F2F)	Assessment of PTSD	CAPS scores were similar between conditions, satisfaction with VC was high
Reese et al., 2012	Youth Age: $M$ (parents) = 33.8; (children) = 7.6	8 families	Pre-Post	ADHD	Families reported improved child behavior, and decreased parental distress
Shore et al., 2007	Adult (RURAL) Age: $M = 54$	53	RT (VC vs. F2F)	Psychiatric assessment	Majority of kappa statistics were classified as good or fair agreement
Stain et al., 2011	Youth (RURAL) Age: $M = 20$	11	RT (VC vs. F2F)	Assessment of neurological status in rural youth with early psychosis	Videoconferencing produced higher ratings than the face-to-face assessments; participants were satisfied with the videoconferencing modality

Note. RCT = randomized controlled trial; PTSD = posttraumatic stress disorder; VC = videoconferencing; F2F = face-to-face; OCD = obsessive-compulsive disorder; RT = randomized trial; HAMD = Hamilton Rating Scale for Depression; CBT = cognitive-behavioral therapy; CAPS = Clinician Administered PTSD Scale; ADHD = attention deficit hyperactivity disorder.

scheduling positive events, monitoring feelings, linking thoughts with feelings, generating alternative thoughts, social skills strategies, problem-solving strategies, anger management strategies, relaxation training, and parent training. Both groups experienced a similar rate of remission from depression. Using videoconferencing to deliver treatment for children and adolescents with chronic illnesses has been successful (Van Allen, Davis, & Lassen, 2011), and a recent study suggests an 8-week parenting intervention using videoconferencing for families of children with attention deficit/hyperactivity disorder can improve children's behavior while decreasing parental distress (Reese et al., 2012). In addition, some studies suggest that psychotherapy via videoconferencing offers unique advantages, including less self-consciousness and confidentiality concerns as the psychologist is outside of the local community (Himle et al., 2006). This is especially salient in rural and remote areas, as anonymity is often difficult to achieve and maintain.

In summary, telepsychological assessment yields similar results as face-to-face encounters for adult clients, and using videoconferencing to deliver psychotherapy appears favorable. This is especially hopeful for rural youth who lack access to resources as previously mentioned. In addition, with increased confidentiality, decreased self-consciousness, and the experience youth have with digital media (Dunstan & Tooth, 2012; Madden, Lenhart, Duggan, Cortesi, & Gasser, 2013), telepsychology for rural youth seems promising. See Table 1 for a summary of studies using videoconferencing for telepsychological treatment.

To establish a successful and ethical telepsychological practice for rural youth, there are several components that need to be considered. Telemental health guidelines exist to support psychologists using videoconferencing in their practice (American Telemedicine Association [ATA], 2009; Myers, Cain, Work Group on Quality Issues, & American Academy of Child and Adolescent Psychiatry, 2008; Nelson & Velasquez, 2011), and there is emerging guidance from the APA (2012). We review aspects of these guidelines that mirror those required for face-to-face practice, with the addition of technology-specific considerations. Some key elements to consider in establishing and maintaining a telepsychology practice with rural youth include (a) needs assessment, (b) technology selection and support, (c) child psychologists and telepsychology practice, (d) remote site coordinator, (e) reimbursement and sustainability, (f) multiple informants, and (g) ethical standards.

### Needs Assessment

The overwhelming majority of behavioral health professionals reside in metropolitan areas, whereas

many underserved youth and families live in rural and frontier settings, which is the norm across many rural states. Barriers to care often include the high cost of transportation, limited public transportation, poverty and unemployment, inadequate health insurance, stigma, and long waiting lists for treatment in areas where there is a limited number of or no specialists available to provide treatment (Larson & Corrigan, 2010; Nelson, Bui, & Sharp, 2011; Pullmann et al., 2010). There is a high need for telepsychological services in rural areas, but it is important for psychologists to identify which communities are more likely to adopt videoconferencing services to fill the access gap by communicating with community organizations, consumer groups, and other key partners. This allows the psychologist to identify what specific mental health presentations, age groups, and interventions are of highest interest and will be more likely to support active clinics. A rural site must also have the technological, organizational, and programmatic infrastructure to support videoconferencing, including the availability of modern and well-functioning videoconferencing equipment; encrypted videoconferencing software; secure clinical space for the equipment setup; and consistent high-speed connectivity. It is important to discuss who will pay for equipment, software, and connectivity when establishing and maintaining telepsychological services. Shore and Manson (2005) presented a six-step model for developing telepsychiatry services that also fits telepsychological services (see also Nelson & Velasquez, 2011). These steps include a needs identification, infrastructure survey, partnership organization, structure configuration (protocols), pilot implementation, and solidification. These steps are consistent with findings across readiness studies and are keys to developing a successful clinic. In alignment with these steps, psychologists often visit potential telepsychology sites to develop strong relationships both with rural staff and the broader community as well as gaining a better understanding of the local culture of potential clients. Needs assessment is an ongoing process in order to evaluate and improve the services offered through new and established telepsychology practices.

### Technology Selection and Support

Over the last two decades, videoconferencing systems have vastly improved and become more inexpensive, user friendly, and reliable (Nelson & Velasquez, 2011). Systems can vary from large conference room setups to desktop computer software, making the units more flexible and the technology increasingly accessible. This increased accessibility and flexibility make implementing a telepsychological clinic easier and more cost efficient as psychologists can often see clients from their offices

between face-to-face appointments. This streamlines their clinics and allows them to fill time between clinical and other tasks. When determining what equipment is best for a telepsychological clinic, it is suggested that psychologists talk not only with vendors but with peers that have used the equipment in their clinics (Nelson & Velasquez, 2011). In addition, discussions with potential rural sites about their equipment availability assist with equipment selection. Most videoconferencing equipment is able to operate on normal high speed Internet connections. This is extremely beneficial to rural clinics that might not have options for connectivity other than their local Internet provider. Broadband connectivity is increasing rapidly in rural areas. Compared to an 11% and 14% increase in broadband penetration in metropolitan and micropolitan areas, respectively, there was a 16% increase from 2007 to 2009 in rural areas (comScore, 2009). In the past, some state and federal initiatives have provided inexpensive, high-speed Internet access to rural hospitals and schools, but many of these programs are being phased out. The ability for rural clinics to use local, inexpensive resources is critical to sustainability. In addition, the psychologist must consider his or her individual setting when considering advantages and disadvantages related to technology and technology security. The use of publically available videoconferencing technologies should be carefully considered from institutional perspectives, including transparent documentation of the product in relation to the Health Insurance Portability and Accountability Act compliance.

### Child Psychologists and Telepsychology Practice

The shortage of practicing child psychologists exists across geographical settings but is particularly apparent in rural and other underserved communities. A study by Thomas, McDowell, and Glasser (2012) found that 90% of healthcare facility CEOs reported that their areas had a shortage of psychological care. A study on rural health found that in 2003 only 0.12% of Rural Health Clinics had Ph.D.-level psychologists available, even though Rural Health Clinics are often primary sources of family health care (Gale, Shaw, Hartley, & Loux, 2010). If a specialist does exist in a rural area, his or her schedule is often booked months in advance.

Psychologists drawn to telepsychology are often engaged in outreach and see advantages of technology-delivered services to save travel time and increase efficiency through seeing multiple remote locations within the span of one clinic. Anecdotally, there are reports of increased attendance at telepsychology appointments, with possible explanations including increased support at the rural site, accessibility of the remote site (e.g., the child is already at school and

able to receive services at the same site), and decreased stigma.

Administrative supports are essential to recruit and retain child psychologists to telepsychology practice. The more the process can approximate existing workflow and productivity procedures, the more appealing it is for busy professionals. Psychologists must continuously consider the legal, regulatory, and risk-management issues associated with telepsychology practice, including licensure, malpractice, credentialing and privileging, security and privacy, and safety plans and emergency management (G. M. Kramer, Mishkind, Luxton, & Shore, 2012). In the academic health setting, telepsychological services require support from leadership and an organizational mission that embraces outreach and service. Successful telepsychology programs develop clear protocols with consideration of ethical-legal implications of telepsychology practice and outline expectations of both the clinician and remote sites. Readily available and continued technical support is also associated with successful programs (ATA, 2011; Nelson & Velasquez, 2011). Psychologists choose from a range of approaches with telepsychology practice with some integrating the services within existing face-to-face clinics, some using only for occasional ad hoc appointments and some developing practices exclusively over videoconferencing. Psychologists are encouraged to seek out mentoring from practicing telemental health professionals as they initiate services.

For established telepsychologists, videoconferencing offers the appeal of seamlessly integrating psychological services to rural youth with other clinical, research, and teaching responsibilities. In addition, telepsychology clinics expand training opportunities for students to work with a range of rural and underserved clients (Dunstan & Tooth, 2012; Nelson et al., 2011). For instance, in our telepsychology clinic, we have had trainees from multiple disciplines including psychology graduate students, social work students, counseling students, psychiatry fellows, pediatric residents, and medical students. The videoconferencing setting draws diverse clients that may otherwise not present to traditional clinics. For instance, some rural farming communities have been particularly impacted by the weather and troubled economic times, and this can affect depression presentations. In rural Kansas, there is a growing Latino population that may have different needs and presentations than urban Latinos. Telepsychology makes these unique encounters possible for trainees.

### Remote Site Coordinators

In the traditional telehealth model that is typically reimbursed, there is a coordinator at the remote site who facilitates videoconferencing encounters and is an ardent supporter and advocate for telehealth, often known as

the site's "champion." The coordinator serves as the bridge between the telepsychologist and the client/family at the remote site. The coordinator assists by promoting the telepsychological service, scheduling the consult, compiling intake packets, socializing the client/family to videoconferencing, utilizing the technology, assisting during the consultation, and helping the client/family follow-up on recommendations. In addition, the remote coordinator can direct the client to local assistance in case of an emergency or urgent situation. Thus, the coordinator requires the support of upper-level administrators in completing these many tasks as they are often outside of typical responsibilities. There are emerging models of telepsychological services, including home-based delivery, that do not include a coordinator; special attention is needed to consider balancing access and client safety (ATA, 2011; Luxton, O'Brien, McCann, & Mishkind, 2012).

### Reimbursement and Sustainability

The decreased cost of telepsychology equipment and connectivity options has made telepsychology initiation more feasible, but long-term sustainability depends on careful business planning and consideration of reimbursement or other funding sources. The Centers for Medicare and Medicaid Services has identified codes for billing of telemedicine services through Medicare with restrictions such as real-time services and limited site characteristics (Practice Central, 2011). States may decide individually to accept or reject Medicaid coverage for videoconferencing services, and a growing number of states require that videoconferencing clinical services be reimbursed similar to face-to-face services. In 2011 it was reported that 35 states had policies in place to accept some sort of telemedicine services as reimbursable compared with 45 states reported in 2013 (Center for Telehealth and e-Health Law, 2011). In addition, an increasing number of private insurers reimburse videoconferencing services, with at least 130 private payers reimbursing for some sort of telemedicine service as of 2007 (Practice Central, 2011). As of 2013, 16 states have legislation that impacts reimbursement of telemedicine through private insurers (Center for Connected Health Policy, 2013).

The majority of CPT codes covering face-to-face visits are also reimbursed in the telepsychology setting, although there are requirements that are unique to both public insurers (Medicare and Medicaid) and private insurers. For example, Medicare telehealth codes currently cover specific services within nursing facilities but not assisted living facilities. Depending on the insurer and facility type, a facility fee may be reimbursed through public insurers. Detailed programmatic data concerning implementation of evidence-supported treatment by

specialists whom clients would otherwise have limited/no access as well as process and outcome data can also be utilized to make a case for telepsychology services among local insurers.

### Multiple Informants

A chief advantage of videoconferencing is the capability of connecting the psychologist and families simultaneously with school personnel, rural health providers, and community members representing other child-serving systems. For youth, the parent/guardian decides who participates in telepsychological encounters. Videoconferencing facilitates communication not only with the psychologist but also across participants such as parents, teachers, case workers, students, and counselors. In this way, everyone contributes to the diagnostic assessment and treatment plan. A frequent occurrence in school-based clinics is little or no direct communication between parents and teachers about the child's behavior. Moreover, informant discrepancy often occurs with self-report measures as youth exhibit different behaviors depending on the setting (De Los Reyes, Youngstrom, Swan, Youngstrom, Feeney, & Findling, 2011). Thus, videoconferencing offers a way to facilitate this interaction because it allows for visual cues that telephone conversations lack, which clients, providers, and other participants have indicated as beneficial (Bolle, Larson, Hagen, & Gilbert, 2009; Locatis et al., 2010). It may also be thought of as a "neutral" zone in that rural youth new to this technology may not have a "script" of how to act. Thus, the telepsychologist and caregivers may be able to evaluate the youth in a novel setting. Important considerations include guaranteeing that the videoconferencing space accommodates all participants and that everyone is reminded of the high standards of confidentiality associated with telepsychology. Because of the high volume of information, the telepsychologist needs to be adept at integrating the clinical input. Overall, videoconferencing promotes a shared responsibility for correctly diagnosing and treating a presenting child or adolescent.

### Ethical Standards

Videoconferencing expands opportunities for treating youth in rural areas but also requires the application of ethical standards followed in face-to-face encounters. The APA (2002) Code of Ethics lists five principles to guide psychologists in protecting themselves and the client: (a) Beneficence and Nonmaleficence, (b) Fidelity and Responsibility, (c) Integrity, (d) Justice, and (e) Respect for People's Rights and Dignity. These ethical standards were used to inform the recent draft of the APA (2012) Guidelines for the Practice of Telepsychology. To better

illustrate situations when these principles might be important, we have incorporated ethical guidance into the following case example. With this case, we also illustrate the relevance of telepsychology for rural youth given the many barriers to treatment including the high cost of transportation, limited public transportation, poverty and unemployment, inadequate health insurance, stigma, and long waiting lists for treatment in areas where there is a limited number of or no specialists available to provide treatment (Nelson et al., 2011; Pullmann et al., 2010). Herein, we also describe how videoconferencing can approximate face-to-face visits for treating youth by outlining steps taken to ensure best telepsychological practice.

## RURAL ADOLESCENT CASE ILLUSTRATION

### Presenting Problem and Case Conceptualization

“Mila” is a 14-year-old Latina female and high school freshman who presented with her mother to the rural telepsychological clinic in her community. She was referred by her pediatrician for evaluation of depression and extreme dieting, including a weight loss of 20 pounds within a 6-week period. The telepsychologist received the pediatrician referral information, the psychology clinic intake, and rating scales including the Children’s Depression Inventory ahead of the appointment. Her parents were married, but her father was in a severe depressive episode precipitated by losing the family farm after a long drought. Mila’s pregnancy, birth, development, and medical history were unremarkable, except for a milk allergy and thyroid difficulty that were well managed. There was a family history of hypothyroidism, anxiety, and alcoholism. Mila and her mother did not hesitate to share family history details suggesting that videoconferencing allows for disclosure within the client and family’s comfort level. During the videoconferencing intake, Mila was also forthcoming about her problem eating, school and social difficulties, and fatigue. She described herself as “depressed” but denied suicidal or homicidal ideation or action; she agreed to a safety plan. She reported adherence to her thyroid and antidepressant medications managed by her pediatrician. Her goal for therapy was “to feel better and have more energy so that I can win at track.” The initial diagnosis was eating disorder not otherwise specified, with a rule-out diagnosis of depressive disorder.

### Before Consultation

Because of the ability for telepsychology to reach remote areas, there is the potential to provide access to many who might otherwise not receive it. However, with this

increased access it is important to carefully consider the ethical principle of justice when determining which sites may be best for telepsychology and include an evaluation of client need, availability and funding for equipment, availability of face-to-face care if telepsychology is not the best option, and community support of this modality. In this case, the client was seen at an established telepsychology site.

Prior to the initial session, Mila and her mother considered available referral options suggested by the pediatrician and the rural clinic. It was determined that the nearest behavioral health specialist was a social worker with no experience treating adolescent youth, and the closest child psychologist was more than 100 miles away. Mila’s mother explained that they could not afford to drive that far for care. Mila’s pediatrician recommended a child psychologist with expertise in depression and eating disorders who could be available for assessment and treatment via videoconferencing from the state’s only academic health center. Mila and her mother were given the option to be seen over videoconferencing as well as to travel for an in-person visit, and decided that using the technology would be a convenient way to see a psychologist without having to drive several hundred miles for care, decreasing time missed from work and school. This would also allow Mila’s mother to join the telepsychology appointment from work using videoconferencing software on her tablet computer.

Telepsychologists strive to approximate, if not exceed, the same assessment and treatment as they would with face-to-face clients. The same detailed consent and Health Insurance Portability and Accountability Act Notice of Privacy Practices used in onsite practice was adapted for the videoconferencing sessions, including availability of medical interpreting if needed, information about how treatment may differ from in person sessions, risks and limitations associated with videoconferencing, acknowledgment of the gaps in research, documentation procedures, and payment or coverage options, which uphold client’s rights and dignity (Barnett & Scheetz, 2003). Examples of informed consents for telepsychological applications are provided by Maheu, Pulier, Wilhelm, McMEnamin, and Brown-Connolly (2004). When reviewing the consent together, the telepsychologist described how emergency situations are to be handled after hours and discussed the importance of a backup plan in case of suicidal, abusive, or other safety concerns. Just as in onsite clinics, the telepsychologist addresses the risks, benefits, confidentiality, and alternatives to the telepsychological clinic as part of the beneficence, nonmaleficence, and integrity principles. The site coordinator can be trained to review this information with the client and family to help streamline the clinical process. In this case, the rural nurse coordinator assisted the family throughout the

process including scheduling with the telepsychologist, faxing history and rating scales ahead of the appointment, establishing the videoconferencing connection, and being available throughout the session for clinical and technical support.

### Intake

The secure videoconferencing equipment for the initial consultation was a standard room-based unit with a larger monitor on a mobile cart. The camera was strategically placed to see Mila and her mother at the table in the room, and the lighting allowed the telepsychologist to easily see facial expressions and behaviors. Close to the therapy room was a fax machine, which facilitated distributing questionnaires, handouts, and therapy activities, as well as a phone in the room for backup in the rare event of equipment failure. In this case, a rural nurse coordinator assisted with setting up the videoconferencing equipment and explained to Mila and her mother how the visit would proceed.

At the intake, the telepsychologist socialized Mila and her mother to the videoconferencing system and acknowledged that it may take some time to acclimate to using the technology. The telepsychologist asked them about their perceptions of using videoconferencing for continued sessions and addressed concerns, including reassuring that no one else could access the videoconferencing encounter and that the session was not being recorded. With the help of the site coordinator, the telepsychologist explained the components of the technology and how they work. They had chatted with relatives using Skype and felt comfortable with the videoconferencing technology, particularly with the additional security measures that Skype does not offer.

In telepsychology practice, confidentiality is a key ethical area related to fidelity and responsibility. In the traditional telehealth model, this includes socializing all related remote site personnel in the high expectations of confidentiality and privacy associated with overall psychological services. This includes confidential management of information and establishing expectations for professional interactions with clients. As mentioned, in rural areas, clients are often neighbors seen every day at school, church, or other community events. Guidance should be provided to coordinators explaining how to secure the room to safeguard against the overhearing of clinical consultations. In addition, the coordinator assists with room management, including directing family members not in session to the waiting room rather than at the videoconferencing room door.

Mila's mother was particularly concerned about confidentiality, so assurance of confidentiality from the telepsychologist was welcomed. To do this, the telepsychologist surveyed the telepsychologist room with the

camera to show that no one else was present. At each session, she also asked them who was present in the room with them. To ensure confidentiality and privacy through the video connection, the use of encrypted videoconferencing technology is suggested in the ATA's (2009) Practice Guidelines for Videoconferencing-Based Telemental Health. The telepsychologist confirmed that only she could see Mila and her mother and no one could hear the conversation due to the encryption technology.

### Course of Treatment

In collaboration with the telepsychologist, client, family, and the pediatrician, the treatment plan focused on cognitive behavioral strategies to encourage adaptive eating and decrease purge behaviors, and to enhance mood management and coping. The telepsychologist and family were also in close communication with Mila's pediatrician outside of the videoconferencing visit to assist with ongoing medical management. In addition, the pediatrician provided valuable input concerning the rural cultural context and norms for the community, such as talking with the family about potential social supports available through their church and broader faith community.

Mila was seen 12 times, with 11 of the visits occurring over videoconferencing. As in face-to-face settings, cognitive behavioral strategies included monitoring purge behaviors to increase awareness and identify triggers and developing alternative coping strategies including relaxation approaches. All cognitive-behavioral strategies were able to be implemented over videoconferencing, with an emphasis on homework and applying skills at home just as in onsite appointments. In addition, the therapist assisted with parent-child communication strategies, with videoconferencing lending itself to coaching the parent to engage in strategies rather than completing tasks for the parent. Mila engaged well in therapy and reported "liking the videoconferencing because it gives me my own space," which is not an uncommon perspective among adolescents. The telepsychologist decided the parents needed couples counseling as a step toward helping Mila but referred them elsewhere for this service, as it was outside the telepsychologist's scope of competence. However, the limited referral resources both in the community and over videoconferencing impeded following this recommendation. This is a challenge both in onsite and telehealth clinics, and efforts are continually being made to establish appropriate referral resources.

Due to Mila's escalating disordered eating behavior during the course of outpatient therapy and pediatrician management, the family agreed to be seen in person at the academic health center for evaluation with an



adolescent medicine specialist, pediatric endocrinologist, and psychiatrist specializing in depression and eating disorders. This reinforces the ethical principle of practicing within one's area of competence and seeking additional consultation to meet the needs of the client. The onsite visit resulted in a hospitalization for observation and returning to her home community with a more detailed treatment plan, including updated psychiatric management in collaboration with her pediatrician. The multidisciplinary team recommended longer inpatient services, but these were not approved by Mila's insurer. In addition to ongoing telepsychological services, these specialists were available by phone and videoconferencing consultation after the onsite visit. With Mila and her mother's consent, the telepsychologist and treatment team also interacted with Mila's broader environment to implement treatment approaches. For example, Mila's teacher attended one videoconferencing session as a school representative to recommend school accommodations to complement Mila's treatment goals.

At the end of therapy, Mila increased food intake and fell within the normal range on her growth chart and her scores on the Children's Depression Inventory were no longer elevated. She also had reengaged in more activities with her family and friends. She returned for a videoconferencing booster session at 17 years old, with a focus on preparing for the stressors of college and mood management.

### Summary

This case study illustrates how videoconferencing can reduce barriers to treatment that often exist in rural communities and how it can approximate or even exceed face-to-face visits. Although most elements of a telepsychology visit are the same as in person care, videoconferencing offers both unique advantages and challenges compared to in person care. The psychologist was able to ascertain adequate information at the initial visit to assist with a diagnosis and treatment plan. The client and family member quickly acclimated to the telepsychological environment, and good rapport was established. When it was necessary for the client to be seen face-to-face and hospitalized, videoconferencing allowed follow-up visits to occur regularly. In fact, adherence to regular follow-up visits was likely enhanced with the convenience of videoconferencing at Mila's local outreach center. Telephone follow-ups were also helpful in providing care to this troubled adolescent. Any treatment materials were easily mailed or faxed to the remote site coordinator for distribution. In addition, the psychologist was able to make appropriate referrals as would have occurred during a face-to-face encounter.

### TECHNOLOGIES OF THE FUTURE

The number of evidence-based assessment and treatment approaches in child psychology has grown substantially over the last decade (Steele, Elkin, & Roberts, 2008). As described previously, videoconferencing technology offers a way to extend these effective treatments to rural communities. Preliminary evidence from research with adults suggests that telepsychological services may be equivalent to face-to-face care in most instances, with unique advantages and challenges with technology-based outreach. With videoconferencing technology becoming increasingly available and affordable, there are many emerging opportunities to use technologies both for direct child psychology services to rural communities as well as adjunct support to onsite therapies. The new healthcare environment that promotes behavioral health integration within a medical home setting also offers exciting new opportunities for videoconferencing services to children and their families. At its core, telepsychology is based on communications technologies and using these technologies to build relationships. A renewed focus on technologies for these communications purposes complements medical home goals of care coordination and timely sharing of information across specialists, including psychologists, in order to improve child and family outcomes.

### Extended Services

There are many opportunities to extend telepsychological services to a wide range of underserved rural populations. For example, we are currently implementing a videoconferencing project for substance abuse prevention and treatment for rural college students, including those in late adolescence. The literature shows that the most widespread health problem on college and university campuses in the United States is high-risk alcohol and drug use (Kapner, 2008) and has been identified as a public health priority (National Advisory Council on Alcohol Abuse and Alcoholism, 2002). Nationally, unauthorized prescription drug use is also common (McCabe, Teter, Boyd, Knight, & Wechsler, 2005). The Harvard's College Alcohol Study data show that binge rates of rural/small town campuses are consistently higher than those of urban/suburban campuses (Wechsler, Lee, Kuo, & Lee, 1999). Rural students are even more at risk than their urban counterparts for nonmedical prescription use (Havens, Young, & Havens, 2011).

These statistics underscore the need for prevention and intervention of substance use and often co-occurring psychological concerns. In addition, other factors including worry about job placement due to difficult economic times and the fact that the highest decline in emotional health in the last 25 years is

occurring among college freshman (Pryor, Hurtado, DeAngelo, Blake, & Tran, 2010), all point to the necessity of reaching out to college students, especially those attending in rural areas. The majority of substance abuse treatment programs have been developed, tested, and evaluated in urban settings, and we are fortunate to have an array of secure, affordable technology options available to connect the specialists with the student health centers, including room-based, PC-based, and tablet-based videoconferencing.

### Partnering Technologies

In addition, there are numerous other technologies available that have the potential to support mental health in rural areas including mHealth, social media, text messaging, health information technology and informatics, computer simulations, virtual worlds, robotics, and biotechnology (Maheu & Abel, 2012). Many of these modalities are Internet-based and may be especially suitable for rural residents who are rapidly gaining access to the Internet and becoming technology savvy (Horrigan, 2009).

Online social networking applications (e.g., Facebook, Twitter, YouTube, and many others) are one of the fastest growing mechanisms to share personal and professional information and to learn about health conditions (Lukes, 2010). Chou, Hunt, Beckjord, Moser, and Hesse (2009) outlined potential benefits associated with the technology, including perceived social support, patient/consumer-centered information sharing, and the dissemination of public health behavioral interventions such as smoking cessation and dietary interventions.

The Health Information Technology for Economic and Clinical Health Act legislation signed into law in February 2009 provides financial rewards to healthcare professionals for their “meaningful use” of technology such as e-health records. It is anticipated that this technological infrastructure for secure electronic data exchange will complement other technology uses, such as telemedicine.

Virtual reality gaming has recently become a means for mental health intervention, although it has been around since the 1980s (Burdea, 2003). Virtual reality is often used in situations where immersion into a “real” situation is either not feasible due to distance or comfort level, or when the provider feels the safety of the patient might be at risk (Ferrer-Garcia, Gutierrez-Maldonado, Caqueo-Urizar, & Moreno, 2009). Virtual reality applications have been applied across diverse mental health concerns, including specific phobias, PTSD, male sexual dysfunction, attention deficit disorder, and test anxiety. A growing use of virtual reality is for treatment of veterans with PTSD (Burdea, 2003). Iraqi veterans have shown more acceptance of virtual reality technology

because they are younger, more computer savvy, and familiar with gaming devices and their functions (T. L. Kramer et al., 2010).

Similar to virtual reality technologies, Second Life is a live, interactive community online that allows participants to create a character/persona, or avatar, and life around that individual (Tu & Smith, 2010). Avatars engage in real-life activities, including independent activities (e.g., listening to music, buying property, etc.) and social activities (Kalning, 2007). Increasingly, health care professionals have been exploring Second Life as another way to reach mental health patients. The Department of Defense recently implemented a Second Life-based virtual world, called the T2Virtual PTSD Experience, to assist with the treatment of PTSD (Pellerin, 2011). Another innovative Second Life application promotes social interactions and skill building with children with autism spectrum disorders. The intervention has the advantage of children’s interest and experience with gaming (Loftus, 2005). Second Life allows children to interact with decreased risk of negative social interactions and resulting embarrassment.

### Innovative Education

Despite the many technology options, there are daunting capacity issues given the limited number of psychologists with a specialization in treating youth. Innovative graduate training programs (e.g., East Tennessee State University, University of Nebraska, and University of Kansas) are bridging this gap by training students in both evidence-based child psychology strategies and best practices in rural telepsychology.

### Challenges

With such innovation and integration comes the potential for new paradigms of care that leverage the unique strengths offered by telecommunication technologies, but the same clinical and administrative concerns related to high-quality care focused on the safety of the child and family must be considered. In addition, this range of options introduces new challenges. For example, a student in the substance abuse program may easily be seen in his or her dorm room; however, this presents a host of new delivery concerns as previously mentioned, such as the privacy of the environment, consideration around seeing clients without a telehealth site coordinator, and the potential to bill for the services.

## CONCLUSION

Because of the widening access gap between rural youth need and child specialist availability, creative options

utilizing technology are more needed than ever. Because it remains true that youth in rural areas have limited access to quality psychological services, it is paramount to address this access gap with treatment approximating face-to-face care. Although the literature regarding youth telepsychological treatment is limited to date, success in treating adult clients with this modality is encouraging. National telepsychological guidelines and ethical principles provide a useful framework for telepsychological practice. However, choosing to utilize videoconferencing for rural psychology services continues to depend on patient and parents' preferences, developmental and diagnostic considerations, personnel and other resources at the remote site, and psychologist' comfort. As demonstrated by the case example, videoconferencing can provide a useful alternative to face-to-face care for youth and families at a distance. Although technologies will continue to advance, it is imperative that client need drives the treatment modality. The next step for telepsychology is to match both the best empirically supported treatments and the best technology delivery options for the individual clients and their families.

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