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Pediatric behavioral telehealth in the age of COVID-19: Brief evidence review and practice considerations

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Considerable efforts over the last decade have been placed on harnessing technology to improve access to behavioral health services. These efforts have exponentially risen since the outbreak of the Coronavirus disease 2019 (COVID-19), which has prompted a move to novel systems of care, largely based on telehealth delivery. This article aims to provide a broad review of evidence for telehealth assessment and treatment of externalizing disorders and internalizing disorders in children and discuss practice considerations and established guidelines for telehealth delivery. Existing literature supports the promise of behavioral health interventions including behavioral parent training and combination approaches for externalizing disorders as well as cognitive-behavioral based interventions for internalizing disorders.

There is a scarcity of work on assessment via telehealth compared with the available treatment literature. While treatment may be most pressing given the COVID-19 circumstances to continue delivery of care, movement toward establishing evidence-based assessment via telehealth will be of increased importance. Lastly, practice guidelines have been set forth by national associations, professional societies, and supported by the development of national Telehealth Centers of Excellence. These guidelines and practice considerations are discussed within the context of COVID-19.

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Behavioral health challenges are highly prevalent and amongst the most widely reported concerns for pediatric populations. Recent data from the Centers for Disease Control and Prevention estimate that one in six children in the United States (US) have a diagnosed mental, behavioral, or developmental disorder.¹ Despite increasing prevalence rates, up to 80% of youth with behavioral health challenges do not have adequate access to services.² Not surprisingly, considerable efforts over the last decade have been placed on harnessing technology to improve access to services, improve delivery of care, and reduce unmet mental health needs, particularly for rural and traditionally underserved communities. The focus of this article will be on telehealth services that involve the delivery of clinical care by providers via

videoconferencing in “real time” or synchronous format. The American Telemedicine Association (ATA) defines Telemental Health as the “videoconferencing-based practice of mental health specialties at a distance”.³

The outbreak of the Coronavirus disease 2019 (COVID-19) has impacted individuals, families, communities, and entire systems of care around the globe and poses the potential to increase existing rates of behavioral health challenges and exacerbate rates of unmet mental health need. Emerging work on the impact of COVID-19 suggests that families impacted by multiple hardships associated with the pandemic (e.g., job loss, social isolation, financial hardship) are more likely to report increases in both child and parent-related mental health concerns⁴ and have higher rates of risk for child maltreatment.⁵ Specifically, high rates of anxiety, depression, and post-traumatic stress have been documented in children and adolescents.⁶ These increases in behavioral health challenges are coupled with significant changes in service delivery as the vast majority of behavioral health services have moved to remote delivery due to national recommendations for social distancing.

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Despite the dismal consequences of COVID-19, one of the few silver linings of this national public health crisis is that it has launched a move to novel systems of care that were desperately needed.

Almost overnight, providers and families alike have had to navigate virtual services while health care institutions and insurance companies have needed to adjust to the changing landscape of service delivery models and billing requirements. While emerging evidence exists for behavioral telehealth services, the science on the efficacy of telehealth has not had a chance to catch up with the widespread use of telehealth across all aspects of behavioral health. It is critical to review the existing evidence for assessment and treatment of childhood mental health disorders and determine future directions for the science of telehealth in pediatric populations. Additionally, it is also imperative to discuss practice considerations in light of existing evidence as well as discuss existing guidelines that have been set forth within the context of COVID-19.

The aims of this article are to:

1. Provide a broad review of evidence for telehealth assessment and treatment of externalizing disorders
2. Provide a broad review of evidence for telehealth assessment and treatment of internalizing disorders
3. Discuss practice considerations and guidelines for telehealth

Of note, given the complexity of assessment and treatment of neurodevelopmental disabilities such as autism spectrum disorder, these were deemed outside the scope of the current article. Previous literature on telehealth assessment, treatment, and coordination of care for autism spectrum disorder in children⁷ and developmental-behavioral pediatrics more generally⁸ offers a more comprehensive review of this topic. Additionally, the focus of this paper was on behavioral health within clinical child and adolescent psychological science outside of traditional pediatric psychology. Traditional pediatric psychology focuses on mental health services as it relates to physical health (e.g., chronic illness, pain management, sleep disorders, feeding disorders). See Nelson and Patton⁹

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for a more thorough review of telehealth practices for pediatric psychology.

Telehealth evidence review for externalizing disorders

Externalizing disorders are one of the most common mental health referrals for pediatric populations. Attention-Deficit/Hyperactivity Disorder (ADHD) is present in about 9.4% of children ages 2–17¹⁰ and co-occurs with Oppositional Defiant Disorder (ODD) in up to one-half of cases.¹¹ From an assessment perspective, early identification of externalizing disorders is key in preventing many of the functional outcomes associated with externalizing disorders such as impairments in academic achievement, behavioral adjustment, and social and cognitive functioning.^{12–15} Additionally, if left untreated, externalizing disorders are predictive of negative long-term outcomes that are often costly to individuals, families, and communities.^{16–18} Thus, efforts have been placed on the assessment and treatment of externalizing disorders via telehealth¹⁹ in an effort to improve access to services for this population and reduce the likelihood of costly public health outcomes.

Assessment of externalizing disorders via telehealth

Evidence-based methods for diagnosing externalizing disorders, such as ADHD, include symptom-based rating scales for caregivers and teachers based on the Diagnostic and Statistical Manual of Mental Disorders-5th Edition (DSM-5) criteria, clinical interviews, impairment measures, and behavioral observations.²⁰ Many of these assessment methods are conducive for remote delivery, making telehealth diagnosis of externalizing disorders feasible. Only one study to our knowledge has investigated diagnostic certainty of ADHD diagnoses derived via telehealth.²¹ This study documented 95–100% adherence to the American Academy of Pediatrics (AAP) ADHD assessment guidelines²² for diagnoses made via telehealth. However, further work is needed examining telehealth assessment using the revised AAP guidelines²³ as

well as the Society for Developmental and Behavioral Pediatrics' guidelines for complex ADHD.²⁴

To our knowledge, no studies have investigated diagnostic certainty of other externalizing disorders or disruptive behavior problems more generally via telehealth. However, many broadband caregiver rating forms (e.g., Behavioral Assessment System for Children-3rd Edition²⁵; BASC-3) as well as more specific instruments (e.g., Eyberg Child Behavior Inventory²⁶; Conners-3rd Edition²⁷) are available for remote administration making them appropriate measures for use during telehealth evaluations for disruptive behavior. Future work is needed examining psychometric properties of behavioral rating scales administered remotely.

Outside of formal diagnostic assessments for externalizing disorders, there has been a recent increase in mobile health technologies (mHealth) for monitoring symptoms of ADHD.^{28,29} Although mHealth tends to be asynchronous and outside the scope of telehealth services covered in this article, these sorts of applications may be useful for functional behavioral assessments and treatment planning. Rismo-Olsen and colleagues²⁸ provide a substantive review of mHealth applications and web services (e.g., myADHDportal.com) for compiling behavioral data.

Treatment of externalizing disorders via telehealth

Evidence-based treatments for externalizing disorders, such as ADHD and disruptive behavior problems (e.g., oppositionality, aggression), are primarily categorized into behavioral, pharmacological, and combined approaches.³⁰ See Table 1 for a summary of existing evidence for telehealth treatments for externalizing disorders.

Behavioral intervention

Behavioral parent training (BPT) is an evidence-based approach for treating externalizing behavior problems in children and empower parents as agents of change through didactic methods and coaching sessions based in behavioral principles.^{30,31} The goals and structure of BPT programs lend themselves well to telehealth delivery as parents may be able to engage with sessions in more convenient and naturalistic settings. Literature is emerging on the use of telehealth across several well-regarded parent training programs.

Parent Child Interaction Therapy (PCIT) is amongst the most well-established behavioral parent training

TABLE 1. Telehealth Treatments for Externalizing Disorders (Exclusively Videoconferencing Approaches).

Population	Intervention	Target Age	Supporting Studies	Outcomes
Disruptive Behavior Disorders (ODD, DBD-NOS, CD)	i-PCIT	2–7	RCT- Comer 2017 ³⁷	-improved child behaviors -improved parenting skills -higher levels of “excellent responders” in i-PCIT group
ADHD	Group Triple P	6–10	Open Trials- Reese et al., 2012 ³⁹ ; Reese et al., 2015 ⁴⁰	-improved child behavior -improved parent distress
	Barkley's Defiant Children (Group)	6–14	Pilot RCT- Xie et al., 2013 ⁴¹	-telehealth comparable to in person delivery for parent skills and child behaviors
	STAND (Supporting Teens' Autonomy Daily)	11–16	Open Trial- Sibley et al., 2017 ⁴³	-improved ADHD symptoms
	CATTS Study: Medication consultation, psychoeducation, & caregiver behavioral training	5–12	RCT- Myers et al., 2013 ⁵⁷ Vander Stoep et al., 2013 ⁶⁰ Myers et al., 2015 ⁵⁵ McCarty et al., 2015 ⁵⁶ Rockhill et al., 2013 ⁶² Tse et al., 2015 ⁵⁸ Rockhill et al., 2016 ⁶¹ Vander Stoep et al., 2017 ⁵⁹	-improved ADHD symptoms -improved functional outcomes
Newly diagnosed ADHD	Bootcamp for ADHD (BC-ADHD)- Group	5–11	Open Trial- Fogler et al., 2020 ⁴²	-used treatment fidelity as tool to guide tele-adaptation

Note. ADHD = Attention-Deficit/Hyperactivity Disorder, ODD = Oppositional Defiant Disorder, DBD-NOS = Disruptive Behavior Disorder-Not Otherwise Specified, RCT = Randomized Controlled Trial, CATTS = Children's ADHD Telemental Health Treatment Study, i-PCIT = internet delivered Parent-Child Interaction Therapy

programs^{32–34} and is particularly conducive to telehealth.^{35,36} Traditional PCIT already harnesses technology to coach parents with separation from the therapist using a “bug-in–ear” device, which can be further extended through telehealth delivery by using Bluetooth technology to coach families over video instead of via a one-way mirror.³⁵ A randomized trial of internet delivered PCIT (i-PCIT) not only documented improvements across child behaviors and parenting skills, but also revealed higher levels of “excellent responders” in the internet delivery group, further highlighting improved generalization of outcomes for treatments delivered in naturalistic environments.³⁷ The growing research base for i-PCIT is also coupled with efforts from PCIT International, making it an effective dissemination model amidst the pandemic. Specifically, PCIT International organized efforts to develop structured materials (online courses for providers, videos, webinars, handouts) to ensure the responsible application of PCIT via telehealth.

Another well-established parent training program that has an expansive research base is Triple P (Positive Parenting Program).³⁸ In addition to Triple P’s multi-level system of prevention and intervention supports, some work has been geared towards further improving cost-efficacy by testing group-based Triple P via telehealth. Open trials demonstrate improvements across parent and child outcomes in parents of children with ADHD after completing Group Triple P via videoconferencing.^{39,40} Also geared toward ADHD in school-aged children, Barkley’s Defiant Children was tested in a group format pilot randomized controlled trial (RCT) and deemed comparable to in-person group delivery across parent and child outcomes.⁴¹ One study investigated a brief group parent training program for children newly diagnosed with ADHD, Bootcamp for ADHD (BC-ADHD), and utilized fidelity measures as tools to guide tele-adaptation during COVID-19.⁴² Notably, these studies include remote delivery of the parenting interventions to a group of parents meeting at a more accessible location (e.g., regional medical

center) with a remote therapist. Although this improves access for a number of families concurrently, the utility of this approach is limited during COVID-19 due to social distancing guidelines and stay at home orders.

Further work is needed on expanding group interventions delivered in family’s own homes to maintain cost-efficacy while increasing generalization to natural environments.

One behavioral intervention for teens with ADHD, Supporting Teens’ Autonomy Daily

(STAND)⁴³ has been examined via telehealth. In a preliminary investigation, improvements in teen’s ADHD symptoms were documented along with improvements in organization, time management and planning.⁴³

Lastly, some parenting programs combine videoconferencing with asynchronous approaches. For instance, the Tantrum Tool,⁴⁴ designed for children between 3 and 9 years old with ODD, combines 8 asynchronous online modules containing didactic information on behavior management with 3 teleconferencing sessions. Similarly, Project PEAK (Promoting Engagement for ADHD in Pre-Kindergartners), designed for children 5–11 at risk for ADHD, included one in-person session with self-paced subsequent sessions.⁴⁵ Completely asynchronous programs also exist and are often prevention based programs, such as the Triple P Online,⁴⁶ Triple P TV series,^{47,48} Incredible Years Computer-Based Version,⁴⁹ Play Nicely,⁵⁰ Internet-Parent Management Training,⁵¹ and Parenting Wisely.⁵² See Breitenstein, et al.⁵³ for a review of telehealth asynchronous parenting interventions.

Combined treatment approaches

Results of the Multimodal Treatment of ADHD Study⁵⁴ suggested that the combination of medication management and behavioral intervention yields optimal outcomes in the treatment of ADHD in school-aged children. The Children’s ADHD Telemental Health Treatment Study (CATTS)⁵⁵ is the largest study to date examining telehealth intervention for children with ADHD. This 5-year RCT tested a telehealth delivery model including medication treatment,

Further work is needed on expanding group interventions delivered in family’s own homes to maintain cost-efficacy while increasing generalization to natural environments.

psychoeducation, and caregiver behavioral training through a community agency with remote supervision. Improvements in ADHD symptoms and functional impairments were documented in the telehealth condition when compared with standard care.⁵⁵ Specifically, the CATTS trial demonstrated that short-term telepsychiatry visits are superior to augmented primary care (i.e. one-time consultation with a psychiatrist) at reduction of ADHD-related symptoms through effective medication titration. A breadth of research has emerged from the CATTS study^{56–59} on a host of additional topics, such as methodological considerations,⁶⁰ psychiatrist medication strategies⁶¹ and additional outcomes.⁶²

Telehealth evidence review for internalizing disorders

Internalizing disorders including anxiety disorders, depression, post-traumatic stress disorder (PTSD), and eating disorders are common with increasing age in pediatric populations.⁶³ Considering the most common internalizing disorders, 7.1% of children aged 3–17 in the US have a diagnosis of anxiety and 3.2% have diagnosed depression. Internalizing disorders can be pervasive if untreated and are associated with a host of functional impairments including social dysfunction and persistent school refusal.⁶⁴

Assessment of internalizing disorders via telehealth

Although literature exists to support the use of telehealth for psychological assessment within adult samples,^{3,65,66} scarce information is available on psychological assessment with children, especially as it relates to internalizing disorders. One study found 95% diagnostic concordance between childhood psychiatric assessments conducted via telehealth and in-person evaluations along with high levels of patient and provider satisfaction.⁶⁷ Although promising, this study included a wide array of psychiatric diagnoses, was not limited to internalizing disorders, and did not include direct examination of the various evidence-based clinical tools for diagnosing internalizing disorders (e.g., clinical ratings scales, structured and semi-structured interviews). A similar study,⁶⁸ also indicated favorable outcomes for general psychiatric assessments via telehealth and documented

comparable demographic variables between children diagnosed in outpatient clinics and those diagnosed over telehealth.

As with externalizing disorders, electronic administration exists for measures of internalizing symptoms in children, including broadband rating scales that measure multiple internalizing domains (e.g., BASC-3²⁵; Beck Youth Inventories⁶⁹) and more specific instruments (e.g., Child Depression Inventory-2nd Edition,⁷⁰ Multidimensional Anxiety Scale for Children-2nd Edition⁷¹). Future work is needed comparing the psychometric properties of electronic administrations to traditional pencil-and-paper administrations of measures for both internalizing and externalizing disorders in child samples.

Treatment of internalizing disorders via telehealth

Cognitive behavioral therapy

Cognitive Behavioral Therapy (CBT) is amongst the most well validated treatment approaches for treating depression and anxiety disorders in childhood.⁷² Telehealth delivery of CBT for children, although limited, has followed downward extensions of Tele-CBT studies for adults.⁷³ A randomized controlled trial of Tele-CBT for childhood depression documented decreases in depressive symptoms comparable across Tele-CBT and in-clinic CBT.⁷⁴ A further step in the downward extension of CBT involves Family Based-CBT, which incorporates parents into CBT for aid with implementation of behavioral components of treatment. Telehealth delivery of family-based CBT has been effective across randomized clinical trials in reducing symptoms of Obsessive-Compulsive Disorder (OCD) and clinical global improvement ratings⁷⁵ as well as functional outcomes for children with early-onset OCD.^{76,77} Lastly, a multiple baseline-design study found considerable treatment response to telehealth family-based CBT for childhood anxiety maintained at follow-up.⁷⁸ See [Table 2](#) for a summary of existing evidence for videoconferencing-based treatments for internalizing disorders.

Trauma-focused CBT (TF-CBT)⁷⁹ has emerged as a leading treatment for childhood PTSD with considerable evidence in reducing behavioral and psychological post-traumatic stress symptoms.⁸⁰ One large community based open trial of 70 trauma-exposed

TABLE 2. Telehealth Treatments for Internalizing Disorders (Exclusively Videoconferencing Approaches).

Population	Intervention	Target Age	Supporting Studies	Outcomes
Depression	CBT	8–14	RCT- Nelson et al., 2003 ⁷⁴	-decreases in depressive symptoms comparable for Tele-CBT versus in-clinic CBT
OCD	Family based CBT	7–16	RCT- Storch et al., 2011 ⁷⁵	-Telehealth superior to waitlist on reduction in OCD symptoms and clinical global improvement ratings
	Family based CBT for Early Onset OCD	4–8	Pilot RCT- Comer et al. 2017 ⁷⁷ Case series- Comer et al. 2014 ⁷⁶	-Reductions in anxiety symptoms -comparable improvements in functional outcomes across groups
Anxiety	Family Based CBT	7–14	Multiple Baseline- Carpenter et al., 2018 ⁷⁸	-Significant proportion were treatment responders -maintained 3 month follow up
	PCIT CALM for Early Childhood Anxiety	4–8	Case Study- Cooper-Vince et al., 2016 ⁸⁷	-reduction in anxiety symptoms
PTSD	Trauma Focused CBT (TF-CBT)	7–16	Pilot open trial- Stewart et al., 2017 ⁸² Large community open trial- Stewart et al., 2020 ⁸¹	-Reduction in PTSD symptoms -feasibility in underserved communities
Eating Disorders (Anorexia)	Family Based Treatment (FBT)	13–18	Case Series- Anderson et al., 2017 ⁹⁰	-Increases in BMI -decreased eating disorder symptoms

Note. CBT = Cognitive Behavioral Therapy, OCD = Obsessive Compulsive Disorder, PTSD = Post-Traumatic Stress Disorder, BMI = Body Mass Index, RCT = randomized controlled trial.

children demonstrated reduction in PTSD symptoms after receiving telehealth delivered TF-CBT.⁸¹ Telehealth delivered TF-CBT is also supported by smaller open trials⁸² and case series documenting its efficacy with Hispanic/Latinx youth.⁸³

Parent/caregiver led treatment approaches

The CALM Program (Coaching Approach behavior and Leading by Modeling) is an adaptation of PCIT for young children with anxiety disorders^{84,85} and led to significant treatment response for young children (4–8) in a pilot open trial.⁸⁶ One case study is currently available on internet-delivered CALM (i-CALM)⁸⁷ and Comer and colleagues have recently completed a waitlist-controlled randomized trial evaluating i-CALM (https://clinicaltrials.gov/ct2/history/NCT03255122?V_4=View).

Although RCTs have demonstrated efficacy for the use of Tele-CBT for bulimia in adults,⁸⁸ the treatment of eating disorders in children and adolescents requires a more parent-led approach. Family Based Treatment (FBT) is one of the leading treatments for eating disorders.⁸⁹ One case series of 10 adolescents with anorexia nervosa demonstrated increases in body

mass index and reductions in eating disordered symptoms after receiving FBT via telehealth.⁹⁰

Psychopharmacological interventions in telehealth

The prescription of psychoactive medication through telehealth approaches, sometimes called telepharmacotherapy, can occur in a variety of models. Prescribers may communicate directly with the patient (direct care model), conduct brief consultation with a primary care or mental health provider (consultation-care model), or provide an interactive, shared decision-making process with a primary care or mental health provider (collaborative-care model). Each model of telepharmacotherapy has its unique strengths and weaknesses that may be relevant for different clinical settings.⁹¹

Research on telepharmacotherapy approaches have largely consisted of feasibility studies regarding the model of care, with reported outcomes such as patient and clinician satisfaction and financial impact. These studies have often been broad with respect to psychopathology and generally do not

separate internalizing and externalizing disorders. Descriptive studies have demonstrated successful application of telepharmacotherapy for pediatric patients in various settings, including juvenile justice facilities,⁹² daycare centers,⁹³ and schools.⁹⁴ Retrospective analyses of outcomes for patients who received medication teleconsultation by subspecialists have demonstrated improvements in child mental health by caregiver report.⁹⁵ Other than the CATTS study referenced above, RCTs comparing telepharmacology to in-person care have largely been conducted in adults.⁹⁶ Overall, telepharmacotherapy has been shown to be equally efficacious to in-person care for adults,⁹⁷ including those living in rural areas⁹⁸ and of low income backgrounds,⁹⁹ as well as veterans with depression¹⁰⁰ and PTSD.¹⁰¹ Despite increasing calls for the adoption of telepharmacotherapy, the field has been slow to generally adopt the practice. A literature review in 2019 demonstrated broadly that medical and psychiatric providers were more likely than patients and families to view telemedicine in an unfavorable light due to concerns about safety, efficacy, and liability.¹⁰²

Practice considerations and guidelines for telehealth

Considerations for future work

Although the body of literature for behavioral telehealth is growing significantly, a myriad of questions remain unanswered about evidence-based practice for telehealth in pediatric populations. The over-night shift to telehealth due to COVID-19 has forced most providers to adapt and tailor their practices significantly based on a relatively small evidence base and a large reliance on anecdotal recommendations from experts in the field. While we have reviewed some evidence-based therapies in this article, many approaches do not yet have substantial evidence to answer certain empirical questions. Specifically,

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information about moderators of treatment outcome for telehealth delivery remain unanswered.

Given the diversity of factors that impact remote delivery, it is imperative to determine child, parent, familial, community, and systemic factors that impact engagement and effectiveness of telehealth, especially for traditionally underserved populations.

These advances would allow for growth of telehealth initiatives and potential development and evaluation of stepped care models that incorporate telehealth practices.

Ecological validity of telehealth interventions

The delivery of treatments in the home setting inevitably increases the ecological validity of treatments, creating greater opportunity for maintenance and generalization of skills outside of the clinic. For treatments that provide parents and caregivers with behavioral strategies to practice between sessions, presenting and practicing these skills in the target setting during telehealth sessions is increasingly useful. Indeed, studies examining internet delivered PCIT have documented greater rates of “excellent response” to telehealth when compared to clinic-delivered PCIT,³⁷ which may partially speak to the ecological validity of the treatment. As the evidence for telehealth delivered treatments continues to grow, future work on generalization of treatment skills is needed.

Access barriers to technology

Access to services is particularly challenging for families in rural areas. In addition to logistical issues including time off work, child-care arrangements, and transportation concerns, families in rural communities often need to travel significant distances to access services, which leads to added costs and stressors. Families living in closer proximity to clinics also experience access issues including provider shortages and increasingly long waitlists for services. The rise of telehealth has improved access for families in rural areas and traditionally underserved communities by

reducing physical distance to services. However, significant barriers to technology continue to play a large role in unmet mental health needs for a number of reasons. First, access to reliable forms of internet connection is not readily available for up to 10% of individuals in the US.¹⁰³ Lack of access to internet connection may be impacted by economic hardship and/or connectivity concerns in rural areas. Greater supports are needed to reach individuals with limited connectivity. Local grants that provide resources for families may be increasingly important in aiding with access to devices and internet connectivity. For instance, the Medical University of South Carolina offers internal grants through the South Carolina Clinical and Translational Research Institute for telehealth pilot grants and technology development awards. These may be utilized to mail out devices to aid with access to telehealth.

Secondly, even when individuals have access to internet connectivity, technological literacy may play a role in telehealth engagement. Challenges with technological literacy may be especially important to consider for older individuals and families from linguistically diverse backgrounds accessing telehealth platforms that are not designed in their native language. Efforts have been placed on improving tele-literacy through programs such as the Telehealth Literacy Project, a multisite videoconferencing education program which yielded positive outcomes for improving use of telehealth and satisfaction.¹⁰⁴ The Vanderbilt School of Medicine also took a similar initiative and implemented a program staffed by medical student volunteers which was effective in preparing patients for virtual visits.¹⁰⁵

Reimbursement challenges and COVID-19 legislature

While telemedicine has been largely reimbursable for physicians, psychologists and other mental health professionals had not been historically able to bill for services delivered via telehealth in a number of states (e.g., South Carolina).

The advent of COVID-19 has significantly changed the landscape of billing practice across private and public health insurance.

Specifically, many insurance companies have implemented

emergency telehealth coverage mandates across states. These mandates prohibit insurers from refusing to cover services that would otherwise be covered if delivered in person. Similarly, Centers for Medicare and Medicaid Services (CMS) have granted flexibility in many states for psychologists to be reimbursed for services delivered via telehealth. The American Psychological Association has compiled a resource on telehealth reimbursement guidelines by state during COVID-19 (<https://www.apaservices.org/practice/clinic/covid-19-telehealth-state-summary>). An additional consideration arises due to state lines as it relates to licensure and credentialing. Typically, providers are constrained to provide telehealth services in states where the patient resides or is seen due to licensure requirements, which sometimes creates additional barriers for providing care to families across state lines. Great variability exists across states' legislation as it relates to permitting endorsement from another state for telehealth delivery and consultation exceptions for telehealth. The Center for Telehealth and E-Health Law offers comprehensive information on state laws regarding telehealth delivery and licensure (www.ctel.org/).

In addition to the concerns for psychotherapy and psychological assessment, legal barriers have also historically prevented widespread application of telepharmacology. For example, the medical treatment of externalizing disorders, like ADHD, often requires the use of psychoactive substances which are classified as Schedule II by the Drug Enforcement Administration. The Ryan Haight Online Pharmacy Consumer Protection Act of 2008 has historically required that the prescription of any controlled substance be predicated on an initial in-person assessment, limiting the breadth of telehealth possibilities. However, due to the declaration of a public health emergency secondary to COVID-19, medical providers are now allowed to issue controlled substances to patients they have not met in person provided that certain conditions are met (e.g., prescription is issued for a legitimate medical purpose by a practitioner acting professional practice,

communication is conducted using an audio-visual, real-time communication system). Similarly, CMS released a statement that allowed for patients to be seen directly in their homes, rather than having to travel to another location. The

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combination of these developments has allowed for the increasing adoption of telepharmacology in a direct-care model, where prescribers interface directly with patients and families in their homes. As this is an entirely novel clinical practice, data on its efficacy as well as best practice recommendations are desperately lacking. The American Academy of Child & Adolescent Psychiatry has a dedicated resource page with general guidance and recommendations for telepsychiatric practice during the age of COVID-19 that is updated with changes in federal guidelines (<https://www.aacap.org/coronavirus#telepsych>).

Guidance frameworks for telehealth practice

Given the rise of telehealth services in the last decade, guidelines have been established to aid providers in the responsible provision of telehealth at the national level. The American Psychological Association set forth telepsychology guidelines in 2013 defining competency criteria, ethical and professional standards of care, informed consent and confidentiality considerations, safeguards for protected health data, and testing considerations. Similarly, practice guidelines for videoconferencing-based telemental health have also been set out by the ATA³ as well as guidelines specific to children and adolescent telemental health.¹⁰⁶ Specific to the outbreak of COVID-19, experts in the field commented on implications for clinical psychological science in a publication by the American Psychological Association.¹⁰⁷

Ideally, with the growth of telehealth research, empirically derived guidelines will be developed to support current guidelines based on expert consensus.

Some professional organizations have also set forth guidelines for specific interventions. For instance, PCIT International set forth initiatives to ensure the responsible delivery of PCIT via telehealth during COVID-19 including webinars, online training modules, and continuous discussion boards. Similarly, guidelines for telehealth with trauma-exposed youth have been specified for use within existing community outreach programs.¹⁰⁸

Lastly, the Health Resources and Services Administration (HRSA) named two National Telehealth

Ideally, with the growth of telehealth research, empirically derived guidelines will be developed to support current guidelines based on expert consensus.

Centers of Excellence (COE) in 2017, the Medical University of South Carolina (MUSC) and the University of Mississippi Medical Center (UMMC). These centers support ongoing regional and national collaborations and proactive dissemination of telehealth resources. The use of these resources is

increasingly important as the field attempts to both expand the literature on telehealth and consolidate existing knowledge to improve systems of care to fit the needs of the changing behavioral health landscape.

In sum, considerable work has documented the promise of evidence-based treatment for externalizing and internalizing disorders via telehealth. While more work is needed on the validation of telehealth-based practices for assessment, the advancement of telehealth has exponentially risen since the outbreak of COVID-19. As the field moves towards novel systems of care, it will be important to expand on work examining factors that impact telehealth delivery at all levels (i.e., individuals, families, communities, systemic).

References

1. Cree RA, Bitsko RH, Robinson LR, et al. Health care, family, and community factors associated with mental, behavioral, and developmental disorders and poverty among children aged 2–8 years—United States, 2016. *Morbidity Mortality Weekl Rep* 2018;67(50):1377.
2. Cummings JR, Wen H, Druss BG. Improving access to mental health services for youth in the United States. *JAMA* 2013;309(6):553–4.
3. Grady B, Myers KM, Nelson E-L, et al. Evidence-based practice for telemental health. *Telemed e-Health* 2011;17(2):131–48.
4. Gassman-Pines A, Ananat EO, Fitz-Henley J. COVID-19 and parent-child psychological well-being. *Pediatrics* 2020;146(4).
5. Lawson M, Piel MH, Simon M. Child maltreatment during the covid-19 pandemic: Consequences of parental job loss on psychological and physical abuse towards children. *Child Abuse Neglect* 2020:104709.
6. de Miranda DM, da Silva Athanasio B, de Sena Oliveira AC, Silva ACS. How is COVID-19 pandemic impacting mental health of children and adolescents? *Int J Disaster Risk Reduct* 2020:101845.
7. Solomon D, Soares N. Telehealth Approaches to Care Coordination in Autism Spectrum Disorder. *Interprofessional*

- Care Coordination for Pediatric Autism Spectrum Disorder. Springer; 2020. p. 289–306.
8. Soares NS, Langkamp DL. Telehealth in developmental-behavioral pediatrics. *J Dev Behav Pediatr* 2012;33(8):656–65.
 9. Nelson E-L, Patton S. Using videoconferencing to deliver individual therapy and pediatric psychology interventions with children and adolescents. *J Child Adolesc Psychopharmacol* 2016;26(3):212–20.
 10. Danielson ML, Bitsko RH, Ghandour RM, Holbrook JR, Kogan MD, Blumberg SJ. Prevalence of parent-reported ADHD diagnosis and associated treatment among US children and adolescents, 2016. *J Clin Child Adolesc Psychol* 2018;47(2):199–212.
 11. Pliszka SR. Psychiatric comorbidities in children with attention deficit hyperactivity disorder. *Pediatric Drugs* 2003;5(11):741–50.
 12. Campbell S, Shaw DS, Giliiom M. Early externalizing behavior problems: toddlers and preschoolers at risk for later maladjustment. *Dev Andpsychopathology* 2000;12:467–88.
 13. Hinshaw SP. Academic underachievement, attention deficits, and aggression: comorbidity and implications for intervention. *J Consult Clin Psychol* 1992;60(6):893.
 14. Nigg JT, Barkley RA. In: Mash Barkley, ed. *Child Psychopathology* Guilford Press, 2014. pp. 75–144.
 15. Nixon E. The social competence of children with attention deficit hyperactivity disorder: a review of the literature. *Child Psychol Psychiatry Rev* 2001;6(4):172–80.
 16. Fergusson DM, Horwood LJ, Ridder EM. Conduct and attentional problems in childhood and adolescence and later substance use, abuse and dependence: results of a 25-year longitudinal study. *Drug Alcohol Depend* 2007;88: S14–26.
 17. Murray J, Farrington DP. Risk factors for conduct disorder and delinquency: key findings from longitudinal studies. *Can J Psychiatry* 2010;55(10):633–42.
 18. Robb JA, Sibley MH, Pelham WE, et al. The estimated annual cost of ADHD to the US education system. *School Ment Health* 2011;3(3):169–77.
 19. Spencer T, Noyes E, Biederman J. Telemedicine in the management of ADHD: literature review of telemedicine in ADHD. *J Atten Disord* 2020;24(1):3–9.
 20. Pelham Fabiano GA, Massetti GM. Evidence-based assessment of attention deficit hyperactivity disorder in children and adolescents. *J Clin Child Adolesc Psychol* 2005;34(3):449–76.
 21. Nelson E-L, Duncan AB, Peacock G, Bui T. Telemedicine and adherence to national guidelines for ADHD evaluation: a case study. *Psychol Serv* 2012;9(3):293.
 22. Committee on Quality Improvement SoA-DHD. Clinical practice guideline: Diagnosis and evaluation of the child with attention-deficit/hyperactivity disorder. *Pediatrics*. 2000;105(5):1158–70.
 23. Wolraich ML, Hagan JF, Allan C, et al. Clinical practice guideline for the diagnosis, evaluation, and treatment of attention-deficit/hyperactivity disorder in children and adolescents. *Pediatrics* 2019;144(4):e20192528.
 24. Barbaresi WJ, Campbell L, Diekroger EA, et al. Society for Developmental and Behavioral Pediatrics clinical practice guideline for the assessment and treatment of children and adolescents with complex attention-deficit/hyperactivity disorder. *J Dev Behav Pediatr* 2020;41:S35–57.
 25. Reynolds C, Kamphaus R. Behavior Assessment System for Children—Third Edition (BASC-3). Bloomington, MN: Pearson; 2015.
 26. Eyberg SM, Pincus DECBI. SESBI-R: Eyberg child behavior inventory and Sutter-Eyberg student behavior inventory-revised: professional manual. *Psychol Assess Resour* 1999.
 27. Conners CK. Conners Third Edition (Conners 3). Los Angeles, CA: Western Psychological Services; 2008.
 28. Olsen MR, Casado-Lumbreras C, Colomo-Palacios R. ADHD in eHealth-A systematic literature review. *Procedia Comput Sci* 2016;100(100):207–14.
 29. Silva BM, Rodrigues JJ, de la Torre Díez I, López-Coronado M, Saleem K. Mobile-health: a review of current state in 2015. *J Biomed Inform* 2015;56:265–72.
 30. Pelham Fabiano. Evidence-based psychosocial treatments for attention-deficit/hyperactivity disorder. *J Clin Child Adolesc Psychol* 2008;37(1):184–214.
 31. Eyberg SM, Nelson MM, Boggs SR. Evidence-based psychosocial treatments for children and adolescents with disruptive behavior. *J Clin Child Adolesc Psychol* 2008;37(1):215–37.
 32. Thomas R, Abell B, Webb HJ, Avdagic E, Zimmer-Gembeck MJ. Parent-child interaction therapy: a meta-analysis. *Pediatrics* 2017;140(3):e20170352.
 33. Thomas R, Zimmer-Gembeck MJ. Behavioral outcomes of parent-child interaction therapy and Triple P—Positive Parenting Program: a review and meta-analysis. *J Abnorm Child Psychol* 2007;35(3):475–95.
 34. Zisser A, Eyberg SM. Parent-child interaction therapy and the treatment of disruptive behavior disorders. 2010;
 35. Comer JS, Furr JM, Cooper-Vince C, et al. Rationale and considerations for the Internet-based delivery of Parent–Child Interaction Therapy. *Cognit Behav Pract* 2015;22(3):302–16.
 36. Gurwitch RH, Salem H, Nelson MM, Comer JS. Leveraging parent–child interaction therapy and telehealth capacities to address the unique needs of young children during the COVID-19 public health crisis. *Psychol Trauma* 2020.
 37. Comer JS, Furr JM, Miguel EM, et al. Remotely delivering real-time parent training to the home: an initial randomized trial of Internet-delivered parent–child interaction therapy (I-PCIT). *J Consult Clin Psychol* 2017;85(9):909.
 38. Sanders MR. Development, evaluation, and multinational dissemination of the Triple P-Positive Parenting Program. *Annu Rev Clin Psychol* 2012;8:345–79.
 39. Reese RJ, Slone NC, Soares N, Sprang R. Telehealth for underserved families: an evidence-based parenting program. *Psychol Serv* 2012;9(3):320.
 40. Reese RJ, Slone NC, Soares N, Sprang R. Using telepsychology to provide a group parenting program: a preliminary evaluation of effectiveness. *Psychol Serv* 2015;12(3):274.

41. Xie Y, Dixon JF, Yee OM, et al. A study on the effectiveness of videoconferencing on teaching parent training skills to parents of children with ADHD. *Telemed e-Health*. 2013;19(3):192–9.
42. Fogler JM, Normand S, O’Dea N, et al. Implementing group parent training in telepsychology: lessons learned during the COVID-19 pandemic. *J Pediatr Psychol* 2020;45(9):983–9.
43. Sibley MH, Comer JS, Gonzalez J. Delivering parent-teen therapy for ADHD through videoconferencing: a preliminary investigation. *J Psychopathol Behav Assess* 2017;39(3):467–85.
44. Diaz-Stransky A, Rowley S, Zecher E, Grodberg D, Sukhodolsky DG. Tantrum tool: development and open pilot study of online parent training for irritability and disruptive behavior. *J Child Adolesc Psychopharmacol* 2020.
45. DuPaul GJ, Kern L, Belk G, et al. Face-to-face versus online behavioral parent training for young children at risk for ADHD: treatment engagement and outcomes. *J Clin Child Adolesc Psychol* 2018;47(sup1):S369–83.
46. Sanders MR, Baker S, Turner KM. A randomized controlled trial evaluating the efficacy of Triple P Online with parents of children with early-onset conduct problems. *Behav Res Ther* 2012;50(11):675–84.
47. Calam R, Sanders MR, Miller C, Sadhnani V, Carmont S-A. Can technology and the media help reduce dysfunctional parenting and increase engagement with preventative parenting interventions? *Child Maltreat* 2008;13(4):347–61.
48. Sanders M, Calam R, Durand M, Liversidge T, Carmont SA. Does self-directed and web-based support for parents enhance the effects of viewing a reality television series based on the Triple P–Positive Parenting Programme? *J Child Psychol Psychiatry* 2008;49(9):924–32.
49. Taylor TK, Webster-Stratton C, Feil EG, Broadbent B, Widop CS, Severson HH. Computer-based intervention with coaching: an example using the Incredible Years program. *Cognit Behav Ther* 2008;37(4):233–46.
50. Scholer S. Play Nicely. 2020;
51. Enebrink P, Högström J, Forster M, Ghaderi A. Internet-based parent management training: a randomized controlled study. *Behav Res Ther* 2012;50(4):240–9.
52. Cefai J, Smith D, Pushak RE. Parenting wisely: parent training via CD-ROM with an Australian sample. *Child Fam Behav Ther* 2010;32(1):17–33.
53. Breitenstein SM, Gross D, Christophersen R. Digital delivery methods of parenting training interventions: a systematic review. *Worldviews Evid-Based Nurs* 2014;11(3):168–76.
54. Cooperative Group M. Multimodal treatment study of children with ADHD. A 14-month randomized clinical trial of treatment strategies for attention-deficit/hyperactivity disorder. *Arch Gen Psychiatry* 1999;56:1073–86.
55. Myers K, Vander Stoep A, Zhou C, McCarty CA, Katon W. Effectiveness of a telehealth service delivery model for treating attention-deficit/hyperactivity disorder: a community-based randomized controlled trial. *J Am Acad Child Adolesc Psychiatry* 2015;54(4):263–74.
56. McCarty CA, Vander Stoep A, Violette H, Myers K. Interventions developed for psychiatric and behavioral treatment in the Children’s ADHD Telemental Health Treatment Study. *J Child Fam Stud* 2015;24(6):1735–43.
57. Myers K, Vander Stoep A, McCarty C. The Children’s ADHD Telemental Health Treatment Study (CATTS): children and caregivers outcomes. 2013;
58. Tse YJ, McCarty CA, Stoep AV, Myers KM. Teletherapy delivery of caregiver behavior training for children with attention-deficit hyperactivity disorder. *Telemed e-Health*. 2015;21(6):451–8.
59. Vander Stoep A, McCarty CA, Zhou C, Rockhill CM, Schoenfelder EN, Myers K. The children’s attention-deficit hyperactivity disorder telemental health treatment study: caregiver outcomes. *J Abnorm Child Psychol* 2017;45(1):27–43.
60. Vander Stoep A, Myers K. Methodology for conducting the children’s attention-deficit hyperactivity disorder telemental health treatment study in multiple underserved communities. *Clinical Trials* 2013;10(6):949–58.
61. Rockhill CM, Tse YJ, Fesinmeyer MD, Garcia J, Myers K. Telepsychiatrists’ medication treatment strategies in the children’s attention-deficit/hyperactivity disorder telemental health treatment study. *J Child Adolesc Psychopharmacol* 2016;26(8):662–71.
62. Rockhill C, Violette H, Stoep AV, Grover S, Myers K. Caregivers’ distress: youth with attention-deficit/hyperactivity disorder and comorbid disorders assessed via telemental health. *J Child Adolesc Psychopharmacol* 2013;23(6):379–85.
63. Ghandour RM, Sherman LJ, Vladutiu CJ, et al. Prevalence and treatment of depression, anxiety, and conduct problems in US children. *J Pediatr* 2019;206:256–67:e3.
64. Cicchetti D, Toth SL. A developmental perspective on internalizing and externalizing disorders. *Intern Extern Express Dysfunct* 2014:1–19.
65. Hyler SE, Gangure DP, Batchelder ST. Can telepsychiatry replace in-person psychiatric assessments? A review and meta-analysis of comparison studies. *CNS Spectr* 2005;10(5):403–15.
66. Luxton DD, Pruitt LD, Osenbach JE. Best practices for remote psychological assessment via telehealth technologies. *Profess Psychol* 2014;45(1):27.
67. Elford R, White H, Bowering R, Ghandi A, Maddigga B, John KS. A randomized, controlled trial of child psychiatric assessments conducted using videoconferencing. *J Telemed Telecare* 2000;6(2):73–82.
68. Myers KM, Sulzbacher S, Melzer SM. Telepsychiatry with children and adolescents: are patients comparable to those evaluated in usual outpatient care? *Telemed J E-Health* 2004;10(3):278–85.
69. Beck J. Beck Youth Inventories Second Edition. San Antonio, TX: NCS Pearson, Inc; 2005.
70. Kovacs M, Staff M. Children’s Depression Inventory. 2nd ed. North Tonawanda, NY: Multi-Health Systems Inc; 2010 (CDI2).
71. March JS. Multidimensional Anxiety Scale for Children (MASC 2): Technical Manual. Multi-Health Systems Incorporated; 2013.
72. Compton SN, Burns BJ, Egger HL, Robertson E. Review of the evidence base for treatment of childhood psychopathology: internalizing disorders. *J Consult Clin Psychol* 2002;70(6):1240.

73. Khatri N, Marziali E, Tchernikov I, Shepherd N. Comparing telehealth-based and clinic-based group cognitive behavioral therapy for adults with depression and anxiety: a pilot study. *Clin Interv Aging* 2014;9:765.
74. Nelson E-L, Barnard M, Cain S. Treating childhood depression over videoconferencing. *Telemed J E-health* 2003;9(1):49–55.
75. Storch EA, Caporino NE, Morgan JR, et al. Preliminary investigation of web-camera delivered cognitive-behavioral therapy for youth with obsessive-compulsive disorder. *Psychiatry Res* 2011;189(3):407–12.
76. Comer JS, Furr JM, Cooper-Vince CE, et al. Internet-delivered, family-based treatment for early-onset OCD: a preliminary case series. *J Clin Child Adolesc Psychol* 2014;43(1):74–87.
77. Comer JS, Furr JM, Kerns CE, et al. Internet-delivered, family-based treatment for early-onset OCD: a pilot randomized trial. *J Consult Clin Psychol* 2017;85(2):178.
78. Carpenter AL, Pincus DB, Furr JM, Comer JS. Working from home: an initial pilot examination of videoconferencing-based cognitive behavioral therapy for anxious youth delivered to the home setting. *Behav Ther* 2018;49(6):917–30.
79. Cohen JA, Mannarino AP, Deblinger E. *Trauma-focused CBT for Children and Adolescents: Treatment Applications*. Guilford Press; 2012.
80. de Arellano MAR, Lyman DR, Jobe-Shields L, et al. Trauma-focused cognitive-behavioral therapy for children and adolescents: assessing the evidence. *Psychiatr Serv* 2014;65(5):591–602.
81. Stewart RW, Orengo-Aguayo R, Young J, et al. Feasibility and effectiveness of a telehealth service delivery model for treating childhood posttraumatic stress: a community-based, open pilot trial of trauma-focused cognitive–behavioral therapy. *J Psychother Integr* 2020;30(2):274.
82. Stewart RW, Orengo-Aguayo RE, Cohen JA, Mannarino AP, de Arellano MA. A pilot study of trauma-focused cognitive–behavioral therapy delivered via telehealth technology. *Child Maltreat* 2017;22(4):324–33.
83. Stewart RW, Orengo-Aguayo RE, Gilmore AK, de Arellano M. Addressing barriers to care among Hispanic youth: telehealth delivery of trauma-focused cognitive behavioral therapy. *Behav Ther* 2017;40(3):112.
84. Comer JS, del Busto C, Dick AS, Furr JM, Puliafico AC. Adapting PCIT to treat anxiety in young children: the PCIT CALM program. *Handbook of Parent-Child Interaction Therapy*. Springer; 2018. p. 129–47.
85. Puliafico AC, Comer JS, Albano AM. Coaching approach behavior and leading by modeling: rationale, principles, and a session-by-session description of the CALM program for early childhood anxiety. *Cognit Behav Pract* 2013;20(4):517–28.
86. Comer JS, Puliafico AC, Aschenbrand SG, et al. A pilot feasibility evaluation of the CALM Program for anxiety disorders in early childhood. *J Anxiety Disord* 2012;26(1):40–9.
87. Cooper-Vince CE, Chou T, Furr JM, Puliafico AC, Comer JS. Videoteleconferencing early child anxiety treatment: a case study of the internet-delivered PCIT CALM (I-CALM) program. *Evid-Based Pract Child Adolesc Ment Health* 2016;1(1):24–39.
88. Mitchell JE, Crosby RD, Wonderlich SA, et al. A randomized trial comparing the efficacy of cognitive–behavioral therapy for bulimia nervosa delivered via telemedicine versus face-to-face. *Behav Res Ther* 2008;46(5):581–92.
89. Lock J, le Grange D. Family-based treatment of eating disorders. *Int J Eat Disord* 2005;37(S1):S64–7.
90. Anderson KE, Byrne CE, Crosby RD, Le Grange D. Utilizing telehealth to deliver family-based treatment for adolescent anorexia nervosa. *Int J Eat Disord* 2017;50(10):1235–8.
91. Hilty DM, Yellowlees PM, Cobb HC, Bourgeois JA, Neufeld JD, Nesbitt TS. Models of telepsychiatric consultation–liaison service to rural primary care. *Psychosomatics* 2006;47(2):152–7.
92. Myers K, Valentine J, Morgenthaler R, Melzer S. Telepsychiatry with incarcerated youth. *J Adolesc Health* 2006;38(6):643–8.
93. Spaulding R, Cain S, Sonnenschein K. Urban telepsychiatry: uncommon service for a common need. *Child Adolesc Psychiatr Clin* 2011;20(1):29–39.
94. Kriechman A, Salvador M, Adelsheim S. Expanding the vision: the strengths-based, community-oriented child and adolescent psychiatrist working in schools. *Child Adolesc Psychiatr Clin* 2010;19(1):149–62.
95. Yellowlees PM, Hilty DM, Marks SL, Neufeld J, Bourgeois JA. A retrospective analysis of a child and adolescent eMental Health program. *J Am Acad Child Adolesc Psychiatry* 2008;47(1):103–7.
96. Cain S, Sharp S. Telepharmacotherapy for child and adolescent psychiatric patients. *J Child Adolesc Psychopharmacol* 2016;26(3):221–8.
97. Cuevas CDL, Arredondo MT, Cabrera MF, Sulzenbacher H, Meise U. Randomized clinical trial of telepsychiatry through videoconference versus face-to-face conventional psychiatric treatment. *Telemed J e-Health* 2006;12(3):341–50.
98. Pyne JM, Fortney JC, Mouden S, Lu L, Hudson TJ, Mittal D. Cost-effectiveness of on-site versus off-site collaborative care for depression in rural FQHCs. *Psychiatr Serv* 2015;66(5):491–9.
99. Chong J, Moreno F. Feasibility and acceptability of clinic-based telepsychiatry for low-income Hispanic primary care patients. *Telemed e-Health*. 2012;18(4):297–304.
100. Ruskin PE, Silver-Aylaian M, Kling MA, et al. Treatment outcomes in depression: comparison of remote treatment through telepsychiatry to in-person treatment. *Am J Psychiatry* 2004;161(8):1471–6.
101. Frueh BC, Monnier J, Yim E, Grubaugh AL, Hamner MB, Knapp RG. A randomized trial of telepsychiatry for post-traumatic stress disorder. *J Telemed Telecare* 2007;13(3):142–7.
102. Cowan KE, McKean AJ, Gentry MT, Hilty DM. Barriers to use of Telepsychiatry: Clinicians as Gatekeepers. Elsevier; 2019. p. 2510–23.
103. 10% of Americans don't use the internet. Who are they. 2015.
104. Banbury A, Parkinson L, Nancarrow S, Dart J, Gray L, Buckley J. Multi-site videoconferencing for home-based education of older people with chronic conditions: the Telehealth Literacy Project. *J Telemed Telecare* 2014;20(7):353–9.

105. Triana AJ, Gusdorf RE, Shah KP, Horst SN. Technology literacy as a barrier to telehealth during COVID-19. *Telemed e-Health* 2020.
106. Myers K, Nelson E-L, Rabinowitz T, et al. American telemedicine association practice guidelines for telemental health with children and adolescents. *Telemed e-Health*. 2017;23(10):779–804.
107. Gruber J, Prinstein MJ, Clark LA, et al. Mental health and clinical psychological science in the time of COVID-19: challenges, opportunities, and a call to action. *Am Psychol* 2020.
108. Jones AM, Shealy KM, Reid-Quñones K, et al. Guidelines for establishing a telemental health program to provide evidence-based therapy for trauma-exposed children and families. *Psychol Serv* 2014;11(4):398.