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## **Telepsychotherapy with children and families: Lessons gleaned from two decades of translational research**

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### Abstract

The novel coronavirus, COVID-19, has led to sweeping changes in psychological practice and the concomitant rapid uptake of telepsychotherapy. Although telepsychotherapy is new to many clinical psychologists, there is considerable research on telepsychotherapy treatments. Nearly two decades of clinical research on telepsychotherapy treatments with children with neurological conditions has the potential to inform emerging clinical practice in the age of COVID-19.

Toward that end, we synthesized findings from 14 clinical trials of telepsychotherapy problem-solving and parent training interventions involving more than 800 children and families with diverse diagnoses including traumatic brain injury, epilepsy, brain tumors, congenital heart disease, and perinatal stroke. We summarize efficacy across studies and clinical populations and report feasibility and acceptability data from the perspectives of parents, children, and therapists. We describe adaptation for international contexts and strategies for troubleshooting technological challenges and working with families of varying socioeconomic strata. The extensive research literature reviewed and synthesized provides considerable support for the utility of telepsychotherapy with children with neurological conditions and their families and underscores its high level of acceptability with both diverse clinical populations and providers. During this period of heightened vulnerability and stress and reduced access to usual supports and services, telepsychotherapy approaches such as online family problem-solving treatment and online parenting skills training may allow psychologists to deliver traditional evidence-based treatments virtually while preserving fidelity and efficacy.

Keywords: telepsychotherapy; brain injury, problem-solving therapy, parent training interventions; epilepsy, brain tumor

## Introduction

The novel coronavirus, known as COVID-19, has prompted a dramatic shift in the ways in which psychologists and other psychotherapists interact with and provide care to their clients. The requirements of physical distancing and sheltering in place have resulted in rapidly changing telepsychotherapy regulations and rules governing third party reimbursement. As a consequence, many psychologists are attempting videoconferencing sessions for the first time, with considerable uncertainty about how the therapeutic experience, including therapeutic alliance, will be impacted. Work with children raises additional issues regarding how to engage and track multiple family members and navigate the distractions of the home environment.

Despite these concerns, the usefulness of telepsychotherapy for children and adolescents with emotional and behavioral difficulties is particularly pivotal now, as our current climate may exacerbate their problems. In fact, the strict restrictions requiring children to stay indoors may negatively affect the way children and adolescents with behavioral problems manage and react to this stressful situation, leading them to feel powerless in facing the great disruption to their lives. Difficulty in regulating negative emotions such as fear, sadness, anxiety, and anger can contribute to increased adjustment problems, creating potentially burdensome situations for children and their families. This highlights the very serious need of addressing their psychological functioning.

Although professional psychology practice has only recently embraced telepsychotherapy, there is a much longer history of translational research examining the acceptability and efficacy of telepsychotherapy interventions going back more than 20 years. Society has turned to computers with greater frequency, especially to obtain mental health resources (Anderson, 2019; Rabasca, 2000). A large number of Internet users have reported the

influence of online information on healthcare-related decisions (Fox, 2013; Ritterband, 2003).

The increased use of online psychological resources illustrates the public demand for, and acceptance of, web-based initiatives. Telepsychology services are embraced by clients as positive experiences due their ability to maintain effectiveness (Laatsch, 2020; Nelson, 2010; Nelson, 2011; Wade, 2019a; Zhang, 2019), while overcoming common barriers (Slomine et al., 2006), such as geographic location, time, and convenience, that hinder traditional therapeutic approaches. Moreover, telepsychotherapy services have the potential to reach wider audiences, given their acceptability and efficacy.

The ultimate goal of telepsychotherapy is to make individualized, evidence-based interventions and therapies readily accessible. Toward this end, researchers and the American Psychological Association have generated guidelines to support telepsychotherapy, while considering existing legal and ethical standards (Joint Task Force for the Development of Telepsychology Guidelines for Psychologists, 2013; Ritterband, 2003). Numerous studies support the acceptability and efficacy of telepsychotherapy services, suggesting that it may be just as effective for many diagnoses and therapeutic issues as traditional therapy practices (Osenbach, 2013; Peñate, 2016; Sloan, 2011). In pediatric psychology, online interventions can educate parents and families about their child's health concerns and equip them with skills, while reducing barriers to treatment (Nelson, 2010; Palermo, 2016; Ritterband, 2003; Wade, 2009).

Telepsychotherapy services have also been found to be feasible and acceptable by participants and therapists alike (Backhaus, 2012; Jenkins-Guarnieri, 2015; Wade, 2009; Wade, 2011). A systematic review found that telepsychotherapy was feasible and associated with high overall satisfaction despite occasional frustrations with technological difficulties (Backhaus et al., 2012). Another systematic review examined studies that directly compared telepsychotherapy

to face-to-face therapies and found no statistically significant differences in satisfaction ratings (Jenkins-Guarnieri et al., 2015).

Our multinational team conducted its first telepsychotherapy trial of online family problem-solving therapy (OFPST) for children with traumatic brain injury (TBI) and their families in 2002 (Wade, 2004; Wade, 2005). Since then, we have conducted 14 trials of telepsychotherapy interventions involving more than 800 children with a range of diagnoses (i.e., TBI, brain tumors, encephalitis, epilepsy, congenital heart disease, perinatal stroke, cerebral palsy) and their families across several countries and settings. Our findings, published in numerous peer-reviewed journals, support the feasibility, acceptability, and efficacy of telepsychotherapy interventions with children with neurological conditions. *Thus, our overarching goal is to outline the lessons learned from nearly two decades of translational research on telepsychotherapy interventions to inform psychology practice in the era of COVID-19.*

In the sections below, we describe the evidence for two types of telepsychotherapy interventions (problem-solving therapy and parenting skills training) with pediatric neurological populations, families' perspectives including therapeutic alliance and satisfaction data, and perspectives from the therapists. We then share our experiences with troubleshooting technology issues, privacy and boundary issues, and supporting families with less proficiency or access to technology.

### **Methods**

Our team has adapted problem-solving therapy (Nezu et al., 2006) and parenting skills training (Eyberg, 1988) for telepsychotherapy with children with various neurological conditions. A brief description of each of these approaches along with references to previous

publications when applicable is included to orient the reader. All of the studies were approved by the institutional review boards of participating hospitals, and informed consent was obtained from adult participants and assent from adolescent participants. Table 1 provides a summary of specific studies, their target populations, and associated findings.

### **Online Problem-Solving**

We adapted the problem-solving framework of Nezu et al. (2006) initially for children with TBI and their families. Nezu et al.'s problem-solving therapy framework includes challenging unhelpful cognitions, stopping and thinking, and a 5-step problem solving heuristic (Nezu et al., 2006). We renamed the steps of problem solving to Aim, Brainstorm, Choose, Do it, and Evaluate to create a simpler ABCDE framework for children and families. Additionally, we incorporated psychoeducation about the cognitive and behavioral consequences of TBI along with training in communication, self-regulation and anger management to help children cope more effectively with the consequences of their injuries. The program consisted of two parts. Families completed self-guided online modules that provided didactic information, exercises to support skill acquisition, videos of actual adolescent brain injury survivors describing their experiences, and scripted videos of actors modeling how to apply skills. Completion of each online module was followed by a telepsychotherapy session, via videoconferencing, to review the module content and implement the problem-solving process around an aim identified by the family. The program included 8-10 core sessions and up to 4 optional supplemental sessions addressing issues of relevance to some but not all families (e.g., sleep problems, plans for after high school).

The OFPST was tested in five randomized controlled trials (RCTs) with children and adolescents with TBI and their families as well as in a comparative effectiveness study that

compared face-to-face, telepsychotherapy, and self-guided online modalities. The OFPST program, also known as Teen Online Problem Solving (TOPS) and Counselor Assisted Problem Solving (CAPS), was adapted for use in the United Kingdom (U.K) and Italy. The program was also adapted for different populations including adolescents with epilepsy and adolescent/young adult survivors of brain tumors. Specifically, Epilepsy Journey is a gamified, online learning environment comprising 10 learning modules targeting executive functioning deficits (e.g., working memory, organization) with accompanying telepsychotherapy problem-solving sessions (Modi et al., 2017). Each module is focused on an executive functioning skill from the Behavioral Rating Inventory of Executive Function (BRIEF; Gioia, 2000; Guy, 2004). There is also a module focused on sleep/stress, which influences executive functioning skills. The Survivor's Journey program for adolescent/young adult survivors of pediatric brain tumors also features a gamified online learning environment, but focuses on common survivor concerns and symptoms such as fears of recurrence and fatigue, in addition to executive function challenges (Moscato, 2019; Raj, 2018; Wade, 2020). Both Epilepsy Journey and Survivor's Journey, which focus on the adolescent/young adult and do not involve families, were trialed in single-arm pilot studies.

### **Online Parenting Skills Interventions**

Given the need for developmentally tailored interventions to address behavioral challenges in younger children, we developed and tested a telepsychotherapy parenting skills intervention to promote warm, responsive parenting and consistent nonpunitive discipline in families of young children who had sustained a TBI. The I-InTERACT (Internet-based Interacting Together Everyday: Recovery After Childhood) parent skills program was based on evidenced-based face-to-face interventions (Eyberg, 1988). Similar to the OFPST program, I-



InTERACT integrated self-directed online modules and telepsychotherapy sessions with a trained therapist. Module content focused on how brain injuries change child behavior and parenting/family interactions and specific parenting behaviors to support warm, responsive parenting and consistent discipline. Given that children with neurological diagnoses often have difficulty learning from consequences, traditional parent skills content was modified to address antecedent behavior management, which was framed as “setting your child up for success.” Online modules were followed by telepsychotherapy sessions in which the therapist reviewed website content and coached the parent in-vivo using Bluetooth technology while the parents were playing with their child. Both an abbreviated 7-session version and 10-session version that provided additional information about TBI-related behavioral challenges, parent stress management, and family communication were trialed (Aguilar, 2019; Wade, 2017). The I-InTERACT program was subsequently used in trials with children with neonatal hypoxic ischemic encephalopathy (HIE), perinatal stroke and congenital heart disease (CHD) in Canada and children with acquired brain injuries (ABI) in the U.K.

## **Results**

### **Program Efficacy**

#### ***Problem-Solving Therapy***

Five RCTs, a comparative effectiveness study, and an individual participant data meta-analysis provide support for the efficacy of the OFPST program in reducing behavior problems and executive dysfunction in children and adolescents with moderate to severe TBI (Wade et al., 2019a, 2019b). The individual participant meta-analysis found that OFPST reduces child behavior problems, improves family functioning, and leads to decreases in parental distress immediately post-treatment and a full year after treatment (Wade et al., 2019a). Moreover,

families of lower socioeconomic status or with higher initial distress may be particularly likely to benefit. The risk of bias regarding these findings is low, given the existence of a multi-site single-blinded trial and confirmatory results from meta-analysis (Corti et al., 2019; Wade et al., 2014; Wade et al., 2019b).

**Adaptations.** Extending these findings to the epilepsy and brain tumor population, both *Epilepsy Journey* and *Survivor's Journey* led to improvements in parent and self-reported health-related quality of life (Wade et al., 2020; Modi et al., 2019; Modi, under review). *Epilepsy Journey* has been shown to improve parent and adolescent-reported executive functioning skills and emotional and behavioral functioning. For brain tumor survivors, those who were diagnosed at less than age 7 and those with average or above IQs benefited most (Wade et al., 2020). Although promising, risk of bias is higher given that these studies had small sample sizes and lacked comparison groups.

### ***Parenting Skills Training***

Two RCTs support the efficacy of an online parenting skills program for parents of young children with TBI. The first RCT (Antonini et al., 2014) tested the effects of a 10-session version of the program and found improvements in parents who participated in the intervention in positive parenting skills over the control group. The trial also found improvements in child behavior among low-income families in the parenting skills group, beyond that observed in the control group. The second RCT compared three arms: an express parenting skills program (7-sessions), I-InTERACT (10-sessions), and an internet resource comparison group. Parents in both intervention groups displayed higher levels of positive parenting post-treatment. Children with higher baseline behavior problems in the intervention groups demonstrated significant improvements in behavior problems relative to children in the comparison group. Children in the

abbreviated parent-skills group were also rated as having significant improvements in internalizing behaviors relative to controls. Risk of bias was mitigated by a multi-site randomized controlled design and concealment of group assignment from those coding the parent-child interactions (Wade et al., 2017).

### **Feasibility, Acceptability, and Family perspectives**

#### ***Problem-Solving Therapy***

Across five trials of OFPST for children with TBI and their families, families attended on average 7.5 (SD = 3.6) sessions. Children and parents completed ratings of perceived program benefits and global satisfaction ratings at the post-treatment assessment. Both scales were developed specifically to determine satisfaction of OFPST, and Cronbach's alphas for the scales were .90 or higher. The perceived-program-benefits subscale included questions such as "As a result of the program, I have reached the goals that I had when I began the program." Primary caregivers and children rated questions on a 4-point Likert scale from "strongly disagree" to "strongly agree." Perceived program benefits among both parents (M = 3.11, SD = .50) and children were high (M = 3.09, SD = .44), suggesting that on average, parents and children "agreed" that the program was beneficial. On the global satisfaction subscale, parents and children rated items such as "The program was helpful," on a 10-point Likert scale from "Not at all" to "Completely." Parents (M = 8.39, SD = 1.99) and children (M = 7.47, SD = 2.03) rated their global satisfaction as high (Wade et al, 2018).

A comparative effectiveness trial that randomized participants to one of three conditions, face-to-face therapy, self-guided online therapy, and therapist-guided online therapy, also demonstrated feasibility and acceptability. Families in the face-to-face arm were more likely to drop out of treatment before the follow-up visit (Lantagne et al., 2018). As detailed in Wade et

al. (2018), both parents and adolescents perceived the online arms (either with or without therapist involvement) as more convenient and beneficial. However, post-treatment satisfaction was higher in the face-to-face arm, perhaps in part attributable to more dropouts among dissatisfied face-to-face participants. Despite greater satisfaction in the face-to-face arm, therapeutic alliance was higher among participants in the therapist-guided online therapy arm ( $t(35) = 2.08, p = .045$ ).

Quantitative and qualitative data from other OFPST trials also suggested that families were able to develop strong relationships with therapists using telepsychotherapy. Therapeutic alliance was assessed quantitatively in three other trials of OFPST and qualitatively in the TOPS-UK study. Parents and children completed the Therapeutic Alliance Questionnaire, which contains four subscales: (1) bond, (2) partnership, (3) openness/comfort with the therapist, and (4) confidence in the therapist. Average parent ( $M = 6.35, SD = .72$ ) and child ( $M = 6.12, SD = .78$ ) ratings, which were rated on a seven-point Likert scale, were high.

### **Adaptations**

**TOPS-UK.** Parents and adolescents completed all 10 sessions of the U.K. trial of OFPST and gave positive feedback about the intervention. In qualitative interviews, participants commented that the content of the intervention was good, in particular goal setting and timetabling, positive thinking, communication, and relaxation. Participants enjoyed the flexibility of sessions, the ability to choose content outside of the core sessions, and to take as much or as little from the sessions as they needed. The timing and length of sessions, however, was challenging for some participants. For example, for children who experienced problems with fatigue, participating in sessions at the end of a day was taxing. Parents also reflected on benefitting from the intervention. Parents reported that the intervention provided them with an

insight into their child's experiences, and an opportunity to spend time together. One parent also suggested that the intervention provided an opportunity for respite.

The relationship with the therapist was noted as important and was positively reflected upon in the qualitative interviews with participants. Therapist qualities included being engaging, humorous, patient, relatable, and easy to talk to. In addition, two parents reflected that they felt the therapist provided support beyond the scope of delivering intervention sessions.

***Epilepsy Journey.*** An overwhelming majority of parents (97%) and adolescents (97%) found the Epilepsy Journey useful and endorsed that they would recommend the program to others. Ninety percent of parents and 87.5% of adolescents stated they and their adolescent continued to use the skills learned from the program five months after it ended. In particular, qualitative feedback following Epilepsy Journey indicated participants identified interaction with the therapist, problem-solving, and specific modules (e.g., mood, memory, sleep) as particularly helpful (Modi et al., 2019).

***Survivor's Journey.*** Similarly, most brain tumor survivors completed at least the four core sessions of Survivor's Journey, with survivors completing an average of eight therapy sessions. The program was considered usable and feasible for survivors with complex medical needs, including vision and/or hearing loss (n = 12). All of the survivors (n = 17) who completed Survivor's Journey reported that the content was relevant, they had a plan for dealing with future problems, and that they would recommend the program to others (Moscatto et al., 2019). Many survivors commented on the benefits of the intervention in flexibility of scheduling. Survivor's Journey also improved access to care for those who lived hundreds of miles from the hospital (n = 4).

***Parenting Skills Training***

In a pilot trial of I-InTERACT, families completed on average 12 sessions of the therapy. All families rated the website as easy to use. All families except for one, whose internet could not support videoconferencing, received live coaching over the computer. In terms of website use, all but one family indicated that they spent one to two hours each week on the I-InTERACT website. Families rated the coaching and website content as helpful (Wade et al., 2009). Two RCTs also demonstrated the feasibility of I-InTERACT. In the first RCT, no participants who were allocated to the intervention group dropped out before receiving the intervention (Antonini et al., 2014). In the second RCT, only two participants (5%) dropped out of the I-InTERACT intervention group before receiving the therapy, and only one participant (3%) dropped out of the Express intervention group before receiving the therapy.

Additionally, a small pilot of I-InTERACT supported the acceptability of the program. Qualitative interviews revealed that participants felt comfortable and connected with the therapist. All participants perceived the structure of the intervention, self-guided online modules coupled with therapist-guided sessions, to be helpful. Participants indicated that the live coaching gave families a better understanding of how to implement parenting strategies covered in the self-guided online modules. On the other hand, a few of the participants reported that the flexibility of videoconferencing led to challenges with adherence, indicating that it was easy to put sessions off. Despite common challenges that occur with telepsychotherapy, such as logistics, technical difficulties, and privacy issues, the majority of parents reported the online intervention to be effective while still maintaining a strong therapeutic alliance. A majority of parents rated the video conferences to be overall easy to use, engaging, and helpful compared to telephone calls and face-to-face sessions.

### *Adaptations*

**I-InTERACT-North.** A pilot feasibility trial of an adapted 7-session I-InTERACT program was recently conducted with 20 families following neonatal medical illness or injury (Williams et al., 2020). Of those successfully contacted, 74% agreed to participate, and of those, 80% completed the program with high program compliance (95%). All participants found both the content and eHealth modality to be acceptable.

Over 75% of parents reflected on specific improvement in children's behavior (i.e., "fewer tantrums"), as well as gains in their parenting skills and confidence attributed to the family's participation. For example, one parent noted, "Our parenting towards our child is a lot different now than it used to be; our child is working with us, and we work with him." Another theme endorsed by 90% of families was the helpfulness of the psychoeducation provided about brain injury. One family shared, "We were lost before this program, so we were frustrated, and it got taken out on him [the child] unfortunately. Learning that it might not be his fault but because of his brain injury, that's definitely made us more patient and understanding."

In addition to parents' satisfaction with the intervention content, parents reflected on the ease of the technology and telepsychotherapy approach, describing appreciation of its flexibility. Parents reported on the helpfulness of being able to practice and receive coaching in their own homes in real-life situations. One parent commented, "it was really geared to us; [helps us to] feel successful even when you're hanging on by a thread." Parents also commented on the importance of the videoconference elements, reflecting how the therapy goes beyond "just a phone call." Several families with less technological experience shared the ease of the program. One family commented that, "we're still old fashioned, but it is very user friendly... I've never used Zoom before but once you get it, you get it!"

**I-InTERACT UK.** An express version of I-InTERACT was undertaken in the UK (McHutchison, 2013), and a pilot investigated the acceptability and feasibility for children with ABI. Five families participated in an initial session, and three of these families completed 6 weeks of the intervention. One family withdrew after the first session due to the child being unwilling to engage in ‘special play time,’ and one family could not be contacted after the first session. The three families who completed the six sessions all endorsed the highest level on a five-point Likert scale, indicating that the intervention helped with the parenting of their child, thought taking part in the intervention was a valuable experience, and would continue to use the information gained from I-InTERACT. Families also reported that the children looked forward to the weekly coaching sessions. A family with multiple children in the home reported that the ability to arrange a coaching session when they had childcare available for other children was beneficial. One mother reported the benefit of live coaching as being “good to know what you’re doing right and wrong” by receiving feedback instantaneously.

### **Therapist Perspectives**

Quantitative and qualitative data from therapists suggest that parents and children are able to be engaged in online family-based therapy. In five trials of OFPST, therapists rated within-session engagement and homework participation for primary caregivers and children after each session. Therapists rated parent engagement ( $M = 4.4$ ,  $SD = .65$ ), child engagement ( $M = 4.1$ ,  $SD = .79$ ), and family homework participation ( $M = 3.5$ ,  $SD = .86$ ), which were rated on a 5-point Likert scale, as high.

In trials of online parenting skills, therapists noted benefits of telepsychotherapy. Therapists for the I-InTERACT and I-InTERACT Express programs, with varied telepsychotherapy experience, all detailed the similarity of intervention benefits to the



participants compared to face-to-face treatment. They also noted that telepsychotherapy allows for greater insight into the family's typical functioning, an aspect rarely observable in clinic-based treatment (Wade et al., 2011).

In a study of 17 therapists who had previously delivered online family-based therapy to children with TBI, most therapists indicated that telepsychotherapy was superior to face-to-face therapy in understanding the home environment (85%), reducing the stigma of mental health treatment (62%), and scheduling convenience (54%). Therapists rated most other domains, including therapeutic alliance, attendance, family engagement, and homework participation, as being similar between telepsychotherapy and face-to-face therapy. Therapists reported some challenges with telepsychotherapy including disruptions during session, reading non-verbal cues, and technical and logistical challenges.

### *Adaptations*

**TOPS-UK.** In a qualitative interview, the TOPS-UK therapist reflected that videoconferencing provided a flexible and useful way to work with families. The therapist generally found it easy to engage children and parents in the intervention; however, the therapist reported that the intervention content seemed to be more relevant to the older teens (i.e., 14+ years). Consistent with the participant interviews, the therapist reported fatigue to be an issue with videoconferencing sessions, particularly for participants with additional attention or sensory difficulties.

**Epilepsy Journey.** Qualitative feedback from therapists in Epilepsy Journey indicated that adolescents readily and easily engaged with the telepsychotherapy system. Despite the therapist's initial concerns about using telepsychotherapy, rapport was easily established and maintained with adolescents. In fact, therapists noted that telepsychotherapy sessions facilitated

more personalization, whereby adolescents would show off their pets or favorite objects, which is not typically possible in face-to-face sessions. Therapists also noted the convenience of conducting sessions in the evenings from their home environments.

### **Troubleshooting Challenges**

***TOPS-UK.*** In targeting early intervention to assist with support in brain injury recovery, lessons from TOPS-UK included thinking about the timing of recruitment relative to school milestones (e.g., start of school year/avoid exam times). Consider the nature of the family intervention – it could be beneficial to have particular sessions where the child can participate alone. Doing so could facilitate rapport with adolescents and offer respite for the parents. Initial face-to-face meetings with participants can be helpful to establish the best time/method of contact going forward.

***I-InTERACT UK.*** Connection issues were minimal and restarting the video call resolved issues on all occasions. However, recruitment was challenging, suggesting that the timing of the intervention was likely to be crucial, with difficulties recruiting thought to be related to proximity of the end of the school year.

***Epilepsy Journey.*** General advice by the therapist was to set guidelines and expectations in the first session for appropriate behavior (e.g., be in a private area with no distractions, turning off cell phones, sitting upright in a chair/on couch) and utilizing parental support as needed (e.g., reminders for appointment times).

### ***Privacy and boundaries***

***I-InTERACT-North.*** The I-InTERACT-North therapist team frequently discussed some of the challenges of distraction from very young siblings (<2 years) during session review and special play time; and optimal ways to include them, while still focusing on the target child. One

therapist shared how she was “more aware of potential privacy breaches (and more stressed about them) than I would be during a session at the hospital.” She described a situation with one mother who wore a hijab in public but did not during the InTERACT sessions, presumably because the therapist was a woman. It made the therapist “extra aware of the kind of trust the parents place in us (therapists) by letting us talk to them in their homes.”

The increased flexibility and availability offered by this program has clear benefits for families, though requires therapists to be skillful and reflective when managing their own personal boundaries and well-being. One I-InTERACT-North therapist reflected how having structure and boundaries around availability from the onset of their interactions with families helped them to move through the program more efficiently. Another therapist described “sharing more with families than I would during a hospital visit (e.g., my household schedules or routines) to facilitate scheduling.” She added that the online modality facilitated promotion of parenting skills within their own homes, which were important for generalization of skills acquired.

### *Helping families with less proficiency with technology*

**I-InTERACT-North.** This was an initial challenge for only a few families in the Canadian cohort, but one that was easily overcome with experience over the course of the intervention. Therapists reflected on the importance of the share-screen or chat functions of Zoom to help families from a distance navigate the technology. Having other modes of contact for families (i.e., phone number, email) was also helpful to connect with families to support them in troubleshooting videoconference problems. The biggest challenge was when families had poor Internet connection leading to lagged or frozen video and audio, which was difficult to solve virtually, especially if the problem was related to the home Internet service.

### **Implementation in Different International Healthcare Contexts**

***I-InTERACT-North.*** In Ontario, the wide geography of the families in this cohort precluded in-home visits but allowed the opportunity to ask families about the communities that they live in and provide services to families who may otherwise not have access to behavioral health services. There were also families from many different cultural backgrounds in the cohort. Parents often discussed their own childhood experiences and relationships with their own parents, and how they compared to strategies of the program. One family shared how, in their culture, parents did not play with their children in the same way North American families do. Therapists recommended consideration of these issues as well as family representation for future iterations of the I-InTERACT-North program.

***TOPS-UK.*** In the U.K., treatment via the National Health Service is free at the point of access; however, the commissioning of interventions is decided regionally, and there can be significant discrepancy in service provision across the U.K. (especially across the devolved nations). This is a particular issue for brain injury service provision, where there are only a few National Health Service community neuropsychological rehabilitation services in the U.K. Telepsychotherapy, therefore, provides a unique opportunity to improve access to evidence-based treatments to children with brain injury and their families.

***Italian-TOPS.*** In this specific moment of the COVID-19 emergency, telepsychotherapy constitutes the only method permitted by the Italian government to conduct such services with outpatients. Therefore, OFPST constitutes an important resource to contribute to patients' health. IRCCS E. Medea in Bosisio Parini, Lecco, which is the TOPS copyright holder for Italy, is starting to implement the program with patients to ensure rehabilitation continuity or to reach patients who were not receiving any interventions before the government ordinance was issued. To provide psychological support to a larger number of fragile individuals, we are preparing a

version of the program for patients with other types of ABI and congenital brain injuries, who often present with impaired executive and social functioning (e.g., Joubert syndrome, cerebellar hypoplasia, malformation).

### **Discussion**

The nearly twenty years of translational research described here provide support for telepsychotherapy practice and insights for those engaging in telepsychotherapy for the first time due to the current restrictions on in-person contact. Problem-solving therapy delivered via telepsychotherapy has demonstrated feasibility and acceptability with adolescents of varying etiologies. The OFPST program, with its focus on family communication and interaction, anger regulation, and stress management also dovetails with problems that children and adolescents may face during the current COVID emergency. Similarly, online parenting skills training has established feasibility, acceptability and efficacy and can provide a roadmap for responsive and consistent parenting at a time when structures such as daycare and schools that support families are absent. Feedback from dozens of therapists and hundreds of families underscores the value of such programs, particularly for those at greatest risk.

Across diagnoses, stages of development, socioeconomic status, rural/urban, and diverse cultures (U.S.A., U.K., Canada, Italy), we found high levels of family and patient satisfaction and engagement. In fact, when face-to-face and telepsychotherapy were directly compared, therapeutic alliance was higher in the telepsychotherapy group. These findings are noteworthy given that nearly all of these programs included children with neurological disorders and associated neurocognitive impairments, who not only successfully participated in telepsychotherapy, but also endorsed high levels of therapeutic alliance, satisfaction, and benefit. Thus, our multi-decade, multi-national experience suggests that telepsychotherapy does not need

to be limited to affluent or high-functioning individuals, but rather its effectiveness and appeal is broad. In this regard, even in “normal” times, telepsychotherapy provides an opportunity to reach populations that might not otherwise be able to access treatment. The Italian adaptation of OFPST was predicated on the high number of Italian children with ABI who are not currently provided with adequate rehabilitation after discharge due to geographical barriers. Thus, telepsychotherapy could constitute an optimal alternative, affording comparable treatment choices across rural and urban settings.

Therapists’ perceptions over time (early 2000’s to 2019) also supported the feasibility and utility of telepsychotherapy. Although many acknowledged some anxiety or doubts initially, all viewed telepsychotherapy as highly effective, albeit with some caveats, once they had begun delivering sessions themselves. These perceptions are demonstrated in the therapist’s ratings of client engagement and homework completion, which were high and commensurate with, or superior, to face-to-face treatment. Given that telepsychotherapy remains novel for many psychologists, we should consider how to create communities to provide virtual supervision and support around getting started.

As society has moved to working from home during the COVID-19 pandemic, many have experienced the benefits and challenges of technology, and many of these apply to telepsychotherapy as well. Although meeting with families in their homes affords unique insights, it also necessitates more thoughtful and explicit consideration of boundaries and privacy issues. Experience across studies suggests that addressing these issues upfront and revisiting as necessary is essential. Technical troubleshooting will be necessary at times, but it provides an opportunity to model problem-solving in vivo. Our programs have been successfully used with families with little to no computer literacy, supporting the contention that virtually all

psychologists and families should be able to engage in telepsychotherapy with some patience and support.

In sum, we have drawn on a substantial evidence-base to support the broad implementation of telepsychotherapy during the current inflection point prompted by COVID-19. This crisis may provide an opportunity to translate research to practice, thereby allowing us to broaden access and reduce barriers during the COVID-19 crisis and beyond.

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## Figures

**Table 1: Content and findings across family-based online interventions**

<i>Family Problem-Solving Interventions</i>			
Intervention (Years)	Intervention Type	Parent outcomes	Child outcomes
Online Problem Solving (2001-2003)	Problem-solving	Lower global distress, depressive symptoms, anxiety symptoms; improvements in problem-solving skills	Improved self-control and compliance with parental requests, social competence, total behavior problems, & internalizing
Group vs. Individual Problem Solving (2003-2006)	Problem-solving	Satisfaction with the Web site was high, with more than 90% of the participants rating the Web site content as moderately to extremely helpful. Despite this, parents and children with TBI rated the therapist as extremely helpful and caring.	N/A

<p>TOPS (2006-2009)</p>	<p>Problem-solving with additions of adolescent monitoring and parental scaffolding (focused on increasing adolescent autonomy), non-verbal pragmatics, nonverbal communication, and social problem solving</p>	<p>Improvements in problem-solving and depression (lower SES only); less parent-child conflict</p>	
<p>CAPS (2006-2012)</p>	<p>Problem-solving, communication, &amp; self-regulation</p>	<p>Greater reductions in depression for 5+ sessions; greater reductions in depression &amp; distress (lower SES); decreased parent-reported conflict; improved family problem-solving</p>	<p>Greater improvements in behavior and internalizing problems (high school only); improvements in total behavior problems at 18 month follow-up (high school only); improvements in parent-reported executive function (high school only); some delayed functional improvements (after 1 year of treatment completion)</p>



TOPS RRTC (2010-2015)	Problem-solving with additions of adolescent monitoring and parental scaffolding (focused on increasing adolescent autonomy), Nonverbal pragmatics, nonverbal communication, and social problem solving	The TOPS-Family group had lower levels of parent-reported executive dysfunction at follow-up than the TOPS-TO group, and differences between the TOPS-Family and IRC groups approached significance.	Marital status, maternal education, and parental stress moderated outcomes: Among single parents, TOPS-TO reported better family functioning than TOPS-F and greater cohesion and less conflict than IRC. Among 2-parent families, TOPS-F reported less depression than IRC and less depression and greater cohesion than TOPS-TO. Maternal education also moderated improvements in parent-reported externalizing behaviors, with less educated parents in the TOPS-Family group reporting fewer symptoms.
CHIPS (2014-2017)	Problem solving; face-to-face, family-based online therapy with therapist, family-based online therapy – self-guided	Both parents and adolescents were more likely to agree or strongly agree that they anticipated self-guided online FPS to be the most convenient relative to either of the therapist-involved approaches. Parents were also less likely to anticipate face-to-face treatment as most beneficial, relative to the two online treatments. Parents in the therapist-guided online family treatment reported reduction in depression and global distress. The self-guided group reported reductions in distress between 6 and 9-months post-baseline.	
TOPS-UK (2016-2019)	6 core sessions plus 4 sessions selected from supplementary sessions. Focused on problem-solving, positive thinking (cognitive reframing), self-regulation, and communication	Both parents and children reported positive experiences of the intervention including the usefulness of the session content, the relationship with the coach, and the mode of delivery (videoconferencing). Participants reported that the intervention might have been beneficial earlier in their recovery journey. Although not statistically analyzed, parents also reported a reduction in their child's everyday executive function difficulties, a reduction in parent-child conflict, and an improvement in parent-own symptoms of depression.	
Epilepsy Journey (2016-2018)	Adolescent only online executive functioning intervention;	Not applicable	High parent and adolescent satisfaction ratings; Improved parent-reported and adolescent-reported executive functioning over

	problem-solving focused		time; Improved parent-reported emotional and behavioral functioning; Improved adolescent-reported health-related quality of life. Some noted improvements in adolescent-reported emotional and behavioral functioning. Improvements consolidated over time.
Survivor's Journey (2016-2018)	Problem-solving, adolescent and young adult only	Not applicable	High parent and adolescent satisfaction ratings; Improved aspects of adolescent and parent-reported health-related quality of life
<i>Online Parenting Skills Interventions</i>			
I-InTERACT Pilot (2009-2011)	Parent training	Parents in the treatment group displayed more positive parenting.	Low-income families in the treatment group reported reductions in problem behaviors.
I-InTERACT RCT (2010-2015)	Parent-training; conditions of Express (7 sessions), I-Interact original (10 to 14 sessions) and control	Parents in both express and I-Interact groups displayed more positive parenting. Parents in the I-Interact group had lower levels of negative parenting.	Children in the Express group had lower levels of behavior problem intensity. Children in both intervention groups with higher baseline symptoms demonstrated improvements in behavior problems.
I-InTERACT UK (2013)	Parent training (6 sessions)	Positive parenting behaviors of labelled praised and description increased between the 2 <sup>nd</sup> and 6 <sup>th</sup> sessions, with a large effect size ( $d = 0.96$ ) for increase in total positive	Preliminary investigation of data indicated mixed child outcomes, with both increases and reductions in different types of behaviors on standardized measures. Reports of increases in difficulties were potentially due to a noted increase in parental observation of a broad range of behaviors, and intervention starting in school term and completing in holidays.

		behaviors, and a decrease in total negative behaviors (questions and commands; $d = 0.91$ )	
I-InTERACT North (2019-present)	Parent training (6 sessions) N = 20	Preliminary estimates of effectiveness improvement in parent responsivity with large effect sizes ( $\eta_p^2 = 0.19 - 0.21$ ). In post-intervention interviews, parents reported improved relationship with their child, decreased stress and increased knowledge and sense of competence.	Preliminary estimate of effectiveness showed reduction in intensity of child behavior concerns on parent rating scales as well as in qualitative analyses of post-intervention interviews.

*TOPS = Teen Online Problem Solving, CAPS= Counselor Assisted Problem Solving, TOPS-RRTC = Teen Online Problem Solving- Multisite controlled trial, CHIPS = Coping with Head Injury through Problem Solving; FPS = family problem-solving, UC = usual care, IRC = internet resource comparison group, STBI = severe traumatic brain injury; SES = socioeconomic status, TOPS-TO= Teen Online Problem Solving- Teen Only; I-InTERACT = Internet-based interacting together every day: recovery after childhood traumatic brain injury.*