A Survey Comparing Adult and Child Psychiatry Trainees, Faculty, and Program Directors' Perspectives About Telepsychiatry: Implications for Clinical Care and Training

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Abstract

Telepsychiatry's effectiveness is well established, and interest in it is growing, despite few residency/fellowship core curricula and rotations. A link to a cross-sectional survey was sent via national organization listservs for psychiatry residents, fellows, faculty, and program directors to complete. The survey queried demographics, clinical experience, and views/concerns about telepsychiatry. Descriptive statistics and other analyses compared groups to assess the impact of amount clinical experience and psychiatric specialty (general vs. child and adolescent psychiatry), on interest, and views/concerns about the practice of telepsychiatry. All respondents ($N = 270$; child psychiatry $N = 89$) have limited clinical experience with telepsychiatry (46% overall; 49% of non-child had none versus 40% child). Trainees ($N = 123$; child $N = 43$) expressed less interest than others. All respondents expressed worry about ability to do a physical exam, connectivity, medico-legal issues, and fit for diverse populations. Child respondents expressed less concern than others, but they reported more worry about loss of nonverbal cues. Clinical experience with telepsychiatry in the range of 6–20 h appears to build interest and allay concerns, though 1–5 h also may have a positive impact. More research is needed to assess clinical experience, interest, and concerns for adult and child psychiatry trainees and clinicians. Replicable, curricular interventions appear to be indicated.

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Introduction

Telepsychiatry (TP) or telebehavioral health (TBH) is effective for many types of psychiatric disorders, treatments, and populations (Hilty, Ferrer, Parish, Johnston, Callahan, & Yellowlees, 2013; Gloff, LeNoue, Novins, & Myers, 2015; Hubley, Lynch, Schneck, Thomas, & Shore, 2016; Nelson & Sharp, 2016). Initial concerns about therapeutic engagement, disconnections, and ability to simulate in-person care have subsided and outcomes are comparable (Hilty et al., 2013; Hubley et al., 2016) American Psychiatric Association (APA) and American Telemedicine Association (ATA), 2018). This pertains to care of child and adolescent outpatients (Gloff et al., 2015; Nelson & Sharp, 2016; Hilty, Shoemaker, Myers, Snowdy, Yellowlees, & Yager, 2016; American Academy of Child and Adolescent Psychiatry (AACAP) Committee on Telepsychiatry and AACAP Committee on Quality Issues, 2017; AACAP-APA, 2019; ATA, 2017), collaborative care in primary care (Myers, Vander Stoep, Zhou, McCarty, & Katon, 2015; Hilty,

Sunderji, Suo, Chan, & McCarron, 2018a, b, c), and for diverse populations (Hilty, Feliberti, Evangelatos, Lu, & Lim, 2018a, b, c) and patients in crisis or emergency settings (Reliford, & Adebanjo, 2019). An e-behavioral health (e-BH) continuum has been described from persons/patients using the Internet/web sites, chat groups, self-care management modules, social media, mobile health (e.g., apps, text), store-and-forward and video, or combinations thereof referred to as hybrid care (Hilty, Torous, Parish, Chan, Xiong, Scher, & Yellowlees, 2020). Store-and-forward is defined as data collected (e.g., patient video interview, completion of questionnaire, diary) and then routed to the clinician for use at a later time.

Interest in technology by patients, medical students, and psychiatric trainees has significantly increased, initially fueled by video, web/Internet resources, and the electronic health record, then more recently by mobile health, social media and other technologies (Glover, Williams, Hazlett, & Campbell, 2013; Teshima et al., 2016; Hilty, Torous, et al., 2020) Residents across medicine have attributed inadequate experience, false beliefs of teachers about telemedicine, and speculation about efficacy as the key limiting factors (Glover et al., 2013; Levy & Strachan, 2013), and a survey of residents, program directors, and training directors found that experience is positively correlated with interest and negatively correlated with concerns (Cruz, Orchard, Shoemaker, & Hilty, 2020). Technological expertise is variable, and early video systems had problems that negatively affected user experience. Despite these concerns, some patients, trainees and clinicians were hesitant to share their apprehensions (Hilty et al., 2013; Nelson, Cain, & Sharp, 2017). Furthermore, patients, clinicians, and others adopt technology on a continuum from slowly to quickly based on motivation and other factors like generation/age (i.e., digital natives versus immigrants) (Wang, Myers, & Sundaram, 2013). Ironically, as new generations adapt smartphones, social media, and other technologies, they have more personal technology experience than their teachers (Hilty, Chan, Torous, Luo, & Boland, 2020). These mobile health technologies, particularly wearables with sensors, will transform child, adolescent, and family care by capturing events, symptoms, and ecologic data "in real time" for use in clinical decision making. These technologies may augment self-report and clinical assessments (Krishna, 2017; Odgers, & Jensen, 2020; Russell, & Gajos, 2020).

A broad call for more work in telepsychiatric education (Balon, Beresin, Coverdale, Louie, & Roberts, 2015)—including an evidence-based pediatric telepsychiatry curriculum for trainees and practicing child and adolescent psychiatrists (Khan & Ramtekkar, 2019)—stemmed from a significant gap in the literature (Sunderji, Crawford, & Jovanovic, 2015; Crawford, Sunderji, López, & Soklaridis, 2016). A survey of 46 programs revealed only 21 have a curriculum or informal clinical experience and 12 have only a curriculum (Hoffman & Kane, (2015). Video competencies framed in the Accreditation Council for Graduate Medical Education Milestone domains (Hilty, Crawford, Teshima, Chan, Sunderji, Yellowlees, et al., & Li, 2015; Hilty, Maheu, Drude, & Hertlein, 2018a, b, c) was followed by social media (Zalpuri, Liu, Stubbe, Wrzosek, Sadhu, & Hilty, 2018), telebehavioral health (Maheu et al., 2018; Maheu Drude, Hertlein, Lipschutz, Wall, Long, et al., & Hilty, 2019), mobile health (Hilty, Chan et al., 2020), and asynchronous (Hilty, Torous et al., 2020) competency sets. Methods for teaching, evaluating, and administering them were included. Professionalism related to social media and medico-legal matters is a high priority (DeJong, 2018). It is unclear if learners (i.e., trainees) and those teaching them (i.e., clinicians/faculty) can keep up with the growing evidence base of technology clinical interventions and outcomes.

This study aimed the following:

1. Ask residents, fellows, program directors, and faculty about their clinical experience, interest in, and concerns about TP,
2. Compare child and adolescent psychiatry fellows, program directors, and faculty to those of other general residency and other fellowships in these areas,
3. Assess if and how clinical experience affects interest and concerns, so fellows are confident and have interest in pursuing TP in the future.

We hypothesized that parties' interest in TP and the type and degree of concerns may be based on clinical experience, and if experience was limited, it may affect their views or lead to misconceptions, which would be negatively correlated with interest and future practice with it.

Methods

This is an abbreviated summary of subjects, information collection and data, statistical analysis, and comparisons, as it is previously described (Cruz et al., 2020).

Subjects. The inclusion criteria were willingness to complete the survey and being a psychiatric resident, fellow, clinical faculty, or program director. The link to Survey Monkey was sent by e-mail to academic psychiatric organizations listservs (e.g., American Association for Directors of Psychiatry Residency Programs, Association For Academic Psychiatry) with a request to forward it to relevant parties; reminder emails were sent at 3- and 6-month follow-up. The only de facto exclusion criterion was not participating. There were no incentives or marketing materials.

Information collection (e.g., survey, other). Respondents were asked complete general information questions (e.g.,

geographic, professional demographics but not age, race or ethnicity), a Likert survey on TP clinical experience and interest, and a 47-item yes/no survey about views of TP; it took 10–15 min, was in English language, and was anonymous. Survey questions were iteratively developed, piloted, and revised before use (Cruz et al., 2020). The TP interest and clinical component used 5-item Likert like questions (e.g., for experience, options were no(ne), 1, 2–5, 6–20, 20+ h).

The 47-item true/false or yes/no survey was weighted equally with affirmative/negative questions used or adapted (Cruz et al., 2020) from 5 patient and clinician questionnaires (Horvath & Greenberg, 1989; Stiles, Reynolds, Hardy, Rees, Barkham, & Shapiro, 1994; Schneider, 1999; Yip, Chang, Chan, & MacKenzie, 2003; Robillard & Bouchard, 2004). The content of the questions were assorted, but subgrouping was done based on TP or TBH themes: clinical care effectiveness, specific patients/populations, communication, system/service issues, cost/reimbursement, legal, education/training, and technical. Most questions fit patient care, systems-based practice, communication, practice-based learning, and knowledge Graduate Medical Education Milestone Competency domains. Internal and external consistency evaluation of the survey was not conducted.

Data, statistical analysis, and comparisons. Data received by the research team was kept in a password protected file. Before completing analyses, questionnaires were examined for completion; any missing items, the participant's responses on similar questions from the same category of the questionnaire were substituted (Downey & King, 1998). Descriptive statistics (e.g., averages, percentages) and proportion of responses were calculated for each question. Cohorts were characterized by using proportions and means, if applicable. Between and intragroup comparisons (e.g., clinical experience with TP for Residents/Fellows [Rs/Fs] versus Program Directors/ Faculty [PDs/Fac]; child Fs

versus other Fs) were made based, when possible (i.e., if respondent numbers were not too low); a Pearson chi-square analysis was used for individual responses. Linear regression analysis, including multivariate regression analysis, was performed with participants' clinical experience as primary and interest as secondary factors, then another analysis in reverse order. For all analyses, a significance level of 0.05, which corresponded to a confidence interval of 95%, was used to determine statistical significance.

Institutional review board (IRB). An IRB exemption was granted in 2017, as this was an anonymous pre-COVID-19 survey.

Results

All Respondent Data (*N* = 270)

Subjects totaled 270, with 76 Rs, 47 Fs, 57 PDs, and 90 Fac. Most Rs/Fs responders were from general psychiatry (54%), child and adolescent (33%), and other fellowships (13%; forensic, geriatric, psychosomatic, and substance). In terms of geography for all responders, 76% were practicing in an urban setting.

Clinical experience with TP varied between all and Rs/Fs respondents, respectively, from none (46 to 54%), 1 h (11 to 14%), 2–5 h (13 to 9%), 6–20 h (9 to 12%), or 20+ h (21 to 11%). In terms of interest in TP, overall, 68% of respondents were interested or very interested, 22% undecided, 7% uninterested, and 4% very uninterested; Rs/Fs had less interest, with 58% interested or very interested, 26% undecided, 11% uninterested, and 6% very uninterested.

The 10 most common concerns about TP for all, Rs/Fs, and PDs/Fac, respectively (Table 1), were as follows: that one cannot perform a physical exam (54%, 64%, 47%),

Table 1 Top 10 concerns about telepsychiatry: a comparison of all respondents, residents/fellows, and program directors/faculty

#	Item/Concern	All *N* = 270	R/F *N* = 123	PD/Fac *N* = 147
1	One cannot perform a physical exam	54.47%	63.64%*	47.06%
2	Poor internet connection is a roadblock to implementing TP	51.63%	54.55%	49.26%
3	Liability risks involved with TP are unknown	46.75%	50.91%	43.38%
4	Certain cultures will be less accepting	39.62%	46.36%*	33.09%
5	Non-verbal cues will be missed	35.77%	44.55%*	28.68%
6	Privacy is an issue	32.52%	35.25%	30.15%
7	TP is not as effective as to in-person psychiatry	32.11%	37.27%	27.94%
8	One cannot manage emergencies related to safety with TP	29.67%	49.09%*	22.06%
9	Residency is insufficient for one to become competent in TP	29.67%	40.91%*	20.59%
10	Paranoid patients do not like TP	26.42%	42.67%*	13.24%

Fac faculty, *F* fellow, *PD* program director, *R* resident, *TP* telepsychiatry

*Significant with *p* < 0.05 in comparing Rs/Fs versus PDs/Fac

poor Internet connection is a roadblock to implementing TP (52%, 55%, 49%), liability risks involved with TP are unknown (47%, 51%, 43%), and perceptions or misperceptions that patients from certain cultures will be less accepting (39%, 46%, 33%); the literature shows all cultures receive TP well (Hilty, Ferrer et al., 2013). Rs/Fs were significantly more concerned about handling emergencies related to safety with TP than the PDs/Fac (49 to 22%), as well as about residency being insufficient to become competent in TP (41 to 21%).

Impact of Clinical Experience on Interest

Respondents with none or only one encounter of TP reported being very interested (25%), interested (33%), undecided (25%), uninterested (10%), and very uninterested (5%). As clinical experience increased from none, to 1 – 5 h and to 6 – 20 h, interest in TP increased from 58 to 74% to 82% (Fig. 2).

Impact of Clinical Experience on Views

Those with 0 – 5 h of clinical experience had statistically higher concerns than those with 6 – 20 h, respectively: one cannot perform a physical exam (59 to 42%), liability risks (54 to 28%), poor Internet as a road block (54 to 36%), certain cultures are less accepting (42 to 31%), and nonverbal cues are missed with TP (41 to 24%).

Impact of Interest on Views

Interest was high—with groups interested or very interested in TP (66%)—regardless of clinical experience: 0 – 1 h (42%), 1 – 5 h (11%), 6 – 20 h (10%), or 20+ h (27%). Their concerns were similar to the overall group, as were those of the undecided group.

Residents/Fellows (Rs/Fs) Data (*N* = 123)

Overview

Rs/Fs were numerically, but not statistically, less interested in TP than all participants or, more specifically, PDs/Fac. Respondents typically practice in an urban setting (81%) have clinical experience with TP (54%) and have significant interest in TP (66%) (interested or very interested).

Impact of Clinical Experience on Interest and Views/Concerns

Of the group with 0 – 5 h of clinical experience, 66% were noted to be interested or very interested, 24% were undecided, and only 8% were uninterested or very uninterested. As clinical experience increased, those very interested or interested increased: none (58%), 1 – 5 h (61%), 6 – 20 h (78%), and 20+ h (83%)—the shift from 1 – 5 to 6 – 20 h was substantial.

Subgroup analyses of respondents with 0 – 5 h versus 6+ h both groups were concerned about poor Internet connection as is a roadblock to good care and about ability to perform a physical exam. The 6+ h group, though, had statistically less concerns that nonverbal cues are missed (23%) and that paranoid patient do not like TP (19%).

Impact of Interest on Views/Concerns

Those with high interest in TP had variable clinical experience with TP, and their concerns did not statistically differ from all residents or all respondents. Approximately 80% of those uninterested or very uninterested had no clinical experience, and their concerns were statistically significant versus all respondents and Rs/Fs in terms of loss of nonverbal cues (67%), ineffectiveness (50%), poor Internet connection (50%), and TP as ineffective (50%). Those undecided in terms of interest did not vary from the other groups in experience or concerns.

Program Directors/Faculty (PDs/Fac) Data (*N* = 147)

Overview

PDs/Fac had no (39%), one encounter to 5 h (23%), 6 – 20 (8%), or 20+ h (30%) of clinical experience with TP.

Impact of Clinical Experience on Concerns

Of the 90 respondents with 5 h or less clinical experience with TP, 57% of these responders reported they are interested or very interested in TP, while 25% were undecided, and 16% uninterested or very uninterested. Their concerns did not vary compared with all respondents or to other PDs/Fac or Rs/Fs, specifically.

A COMPARISON OF CLINICAL EXPERIENCE IN TELEPSYCHIATRY FOR ALL PSYCHIATRISTS (N=270), ADULT (N=181) AND CHILD (N=81) PSYCHIATRISTS (in %)
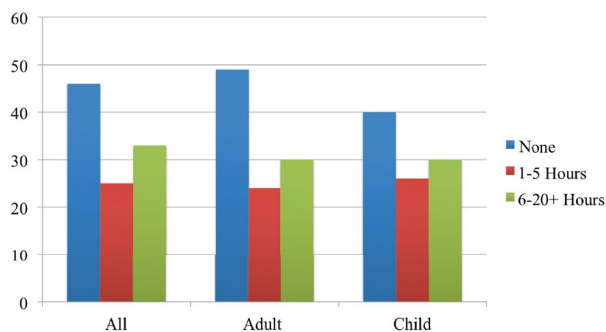

Fig. 1 A comparison of clinical experience in telepsychiatry for all psychiatrists ($N = 270$), adult ($N = 181$), and child ($N = 81$) psychiatrists (In %)

Impact of Interest on Concerns

A high percentage (79%) PDs/Fac were noted to be interested to very interested in TP. Their clinical experience varied: 30% none, 10% a one-time encounter, 13% up to 5 h, 9% from 6 to 20 h, and 38% with more than 20 h of TP. They had less concern about liability risk (36%), though not significant, and rated items like "primary provider may not follow through on recommendations made by the telepsychiatrist" (32%) and "TP offers poor reimbursement"(30%) higher than others.

The undecided group varied in clinical experience—53% had no clinical experience, 19% had up to 5 h, 9% had 6 – 20 h, and 19% had 20+ of TP—and their concerns did not differ from other groups

A COMPARISON OF ADULT PD/FAC & R/F VS. CHILD PD/FAC & R/F PSYCHIATRIST INTEREST IN TELEPSYCHIATRY BASED ON NONE, 1-5 HOURS AND 6-20+ HOURS OF CLINICAL EXPERIENCE
(Abbreviations: PD=program director; Fac=faculty; R=resident; F=fellow; I=interested; VI=very interested; U=uninterested; VU=very uninterested)
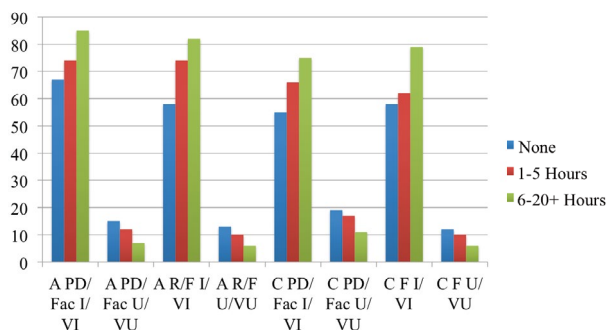

Fig. 2 A comparison of adult program director/faculty and resident/fellow vs. child program director/faculty and resident/fellow psychiatrist interest in telepsychiatry based on none, 1 – 5 h and 6 – 20+ h of clinical experience

except for much less high interest (30% to 53%). The not interested group also had much less clinical experience (63%) and much higher concerns that nonverbal cues are missed (73%) and that TP is not as effective as in-person psychiatry (60%).

Comparing Child Psychiatrists to Non-child Psychiatrists (*N* = 89)

Overview

Child psychiatry respondents included 39 Fs, 30 Fac, 17 PDs, and 3 Rs; practice geography did not differ. Child psychiatrists' clinical experience with TP, compared with all respondents and adult respondents, respectively, varied from none (40% vs. 46% vs. 49%), 1 – 5 (26%, vs. 24% vs. 25%), and 6 – 20+ (34% vs. 30% vs. 33%) h (Fig. 1). This shows the adult psychiatry group had more with none (red) or 1 – 5 (blue) h, the child psychiatry group has more experience at 6 – 20 + (green) hours, and there are statistically fewer child psychiatrists with no experience (40%) than others (49%). The most common child PDs/Fac replies, compared with the non-child ones, were no/none (41 to 40%), 1 – 5 h (26 to 20%), 6 – 20 h (17 to 12%), and 20+ h (16 to 28%) of TP. The most common child Fs replies, compared with the non-child ones, were no/none (46 to 58%), 1 – 5 h (22 to 24%), 6 – 20 h (22 to 13%), and 20+ h (10 to 5%) of TP; the group with no experience was significantly less than for other respondents.

Interest in TP for child psychiatrists varied from very interested (32%), interested (33%), undecided (25%), uninterested (9%) to very uninterested (1%)—technically more interest, but not statistically different from all respondents. Overall, respondents for child Fs, PDs, and Fac, compared with non-child ones, revealed little difference in the interested or very interested (65 to 68%), undecided (25 to 21%), or not interested or very uninterested (10 to 11%) groups.

Adult PDs/Fac were more interested than adult R/Fs, child PDs/Fac, and child Fs regardless of TP exposure (i.e., none, 1 – 5 h and 6 – 20+ h) (Fig. 2). A shift upward in interest for some (e.g., adult Rs/Fs) was noticed between none and 1 – 5 h of exposure, while the shift for others was with 6 – 20+ h (e.g., child Fs). All groups trended toward more interest with increased exposure. Child PDs/Fac were equally interested/very interested and uninterested/very uninterested as child Fs.

Child psychiatry respondents appeared to have less serious concerns, compared with non-child ones (Table 2), with statistically lower differences in inability to perform a physical exam (40 to 60%); poor Internet connection is a roadblock to TP (41% to 57%) and liability risk (40% to

Table 2 A comparison of child and non-child psychiatrist' top 10 concerns about telepsychiatry

Item/Concern	Child	Non-child
One cannot perform a physical exam with TP	43.21%	60.00%*
Nonverbal cues are missed with TP	42.98%	32.73%*
Poor internet connection is a roadblock to TP	40.74%	56.97%*
The liability risks involved in TP are unknown	39.51%	50.30%*
Certain cultures will be less accepting of TP	38.27%	39.39%
One cannot manage emergencies related to safety with TP	30.88%	29.09%
TP is not as effective as face-to-face psychiatry	28.40%	33.94%
Clinicians find TP to be too impersonal	28.40%	24.24%
Residency training is insufficient for one to become competent with TP	27.16%	30.91%
Disruptive behavior cannot be managed with TP	25.93%	26.67%

TP telepsychiatry

*Significant with $p < 0.05$ in comparing child to non-child respondents

50%). An exception to that was a greater concern about loss of non-verbal cues, which was statistically higher for child psychiatrists than non-child psychiatrists (42 to 33%).

Impact of Clinical Experience on Views/concerns

Child psychiatrists with no experience ($N = 36$) worry more than those with 20+ h. Of those with no experience with TP, 40% or more endorsed concern about 9 of the 10 items presented (Table 3). The highest areas of concern were liability risk (60%), inadequate TP training in residency (46%), missing non-verbal cues (43%), and inability to manage emergencies related to safety (40%). Other groups (1, 2 – 5, 6 – 20, and 20+ h paralleled non-child psychiatry counterparts, if not already specifically

discussed, for both Rs/Fs and all respondents (i.e., fewer concerns with 2 – 5 h and much fewer with 6 – 20 h of clinical experience).

Impact of Clinical Experience on Interest

Similar to the experience of Rs/Fs, overall, of the child psychiatry respondents with no exposure to TP at all ($N = 36$), 22% are very interested, 36% are interested, 33% undecided, 6% uninterested, and 3% very uninterested. As clinical experience increased from none, to 1 – 5 h and to 6 – 20 h, interest in TP increased from 58 to 66% to 79%; adult Rs/Fs were similar at 58 to 74% to 82% (Fig. 2). Those uninterested and very interested ranged from 12 to 10% to 6%, compared with adult Rs/Fs from 13 to 8% to 6% (Fig. 2).

Table 3 A comparison of concerns about telepsychiatry between child psychiatrists with no experience versus compared with those with multiple encounters

Item/Concern	No experience $N = 36$[1]	Multiple encounters $N = 22$[1]
The liability risks involved in TP are unknown	60.00%	18.18%*
Residency training is insufficient for one to become competent with TP	45.71%	4.54%*
Nonverbal cues are missed with TP	42.86%	40.91%
One cannot perform a physical exam with TP	42.86%	40.91%
One cannot manage emergencies related to safety with TP	40.00%	18.18%*
TP is not as effective as face-to-face psychiatry	40.00%	13.64%*
Poor internet connection is a roadblock to TP	40.00%	45.45%
Clinicians find TP to be too impersonal	40.00%	13.64%
Certain cultures will be less accepting of TP	40.00%	31.82%
Paranoid patients do not like TP	37.14%	18.18%*

TP telepsychiatry [1]Overall child psychiatry $N = 89$; this is a comparison of two subgroups only

*Significant with $p < 0.05$ in comparing no with significant experience (i.e., multiple encounters)

Discussion

There are several preliminary findings of this survey of clinical experience, interest, and views/concerns, particularly for child and adolescent psychiatry. First, child psychiatrists have a little more clinical experience than other respondents, but it is probably still limited due to time, competing interests and number of TP or TBH options. Second, all respondents' interest in TP is high – consistent with other surveys (Glover et al., 2013; Sunderji et al., 2015)—and child psychiatry interests appears a little higher than that of non-child respondents (Cruz et al., 2020). There may be many patient, clinician, and system reasons for this, aside from effectiveness, evidence base, and therapeutic engagement (Hilty et al., 2013; Gloff et al., 2015; Hubley et al., 2016; Nelson & Sharp, 2016; Hilty, Randhawa, Maheu, McKean, Pantera, & Rizzo, 2020a, b, c, d). It may not just be a generational issue related to technology adoption data and assumptions (Wang et al., 2013), as non-child Rs/Fs have less interest than PDs/Fac. Fellows work with children who have grown up around technology and are comfortable seeing their doctor by video, with some teenagers and those with autism preferring it (Pakyurek, Yellowlees, & Hilty, 2010). TP limits unnecessary travel, reaches rural populations, and reduces school absences and parental time off from work (Gloff et al., 2015). It can also streamline clinical workflows, enable continuity of care, facilitate collaboration among virtual care teams, and improve flexibility in work schedules (Gloff et al., 2015; Khan & Ramtekkar, 2019). For physicians, this may enhance physician satisfaction and well-being, while reducing isolation.

It is premature to conclude that a lack of exposure is negatively impacts trainee interest – though clinical experience appears to predict interest—but lack of exposure directly leads to inadequate knowledge and concerns which may or may not be well founded. Fortunately, child psychiatrists appear to have fewer and less strongly held concerns than non-child respondents, and remarkably, the intensity (i.e., percentages) of concerns drops with 1, 2 – 5, and 6 – 20 h of clinical experience. The study was not geared to measure the "dose" needed to feel comfortable with TP, but data suggest that a threshold of 5 – 6 h may debunk preliminary questions/concerns and 6 – 10+ h may work to develop skills; what residents versus fellows need may be similar or different, as well as based on other factors. This is important, as those physicians that are undecided, uninterested, and very uninterested have higher percentages of concerns, which will help these individuals opt out if they do not find technology as a good fit individually. PDs/Fac cannot depend on interest in TP to develop into a high level of expertise. Attitude (e.g., interest) is not a substitute for supervised clinical experience to develop knowledge and skill (Pratt, 1998). Regardless, child

psychiatry respondents express fewer concerns. This may imply a flexibility and adaptability, perhaps due to working in/with a variety of settings/populations.

The concerns of child psychiatrists have important implications for clinical care and training. The child and adolescent psychiatry respondents were overall less concerned than other respondents about the potential negative impact of TP, such as an inability to perform a physical exam, loss of nonverbal cues, potentially poor fit with culturally diverse populations, managing emergencies, dealing with patients' paranoia, general effectiveness, connectivity, and medico-legal issues (e.g., liability) (Cruz et al., 2020). Pediatric emergency TP is rapidly being established (Reliford & Adebanjo, 2019). Flexibility, adaptability, and interprofessional teamwork will help with performing a physical exam, and similar support or other interventions may be needed to detect nonverbal cues. These are relied on quite heavily, as children frequently are not able to communicate their experiences with words (Nelson et al., 2017; Odgers & Jensen, 2020). The challenges of telepsychiatry may still pale in comparison to challenges and concerns about social media (e.g., cyberbullying, engagement) (Zalpuri et al., 2018), mobile health (e.g., privacy, boundaries, integration of workflow) (Hilty, Chan et al., 2020), and other asynchronous technologies (e.g., addictions or problematic use) (Hilty, Torous et al., 2020; Joshi, Stubbe, Li, & Hilty, 2019).

There is still substantial clinical, educational, research, and faculty development needed related to technology. Most participants in health care, and particularly those working in health systems, are moving forward with technology based on patient needs and the evidence base – aside from the external mandate to "flatten the curve" of COVID-19 spread and "accelerate and bend the curve" of digital health care (Torous, Jän Myrick, Rauseo-Ricupero, & Firth, 2020)—which will "dose" trainees and clinicians alike with clinical experience in TP. Effectiveness and implementation research is needed to help PDs find the curricular dose for TP, though this may depend on general residency training, which could intervene earlier with tangible clinical experiences that may improve Rs/Fs' confidence for future TP practice, and serve as a foundation for subspecialty training, in general. A model of core residency and augmented child TP training has heuristic value, but PDs may be more inclined to design/obtain rotations for electives rather than required rotations due to time constraints, faculty expertise and other factors. As many training programs may struggle to amass the resources required to meet the suggested competency requirements for video, social media, mobile health, and asynchronous technologies in combination with cultural competencies (Hilty, Gentry, McKean, Cowan, Lim, & Lu, 2020; Hilty, Crawford et al., 2015; Hilty, Maheu et al., 2018a, b, c; Zalpuri et al., 2018), a strong case can be made

for an inter-institution pooling of resources (i.e., curricula, faculty teachers/supervisors, evaluation processes). Institutional competencies have been suggested, which would consolidate clinical care, residency/fellow training, and faculty development missions around core competencies (Hilty, Torous et al., 2020; Hilty, Unützer, Ko, Luo, Worley, & Yager, 2019). Faculty that have not trained in the use of technology in clinical settings would benefit from the training the fellows receive to ensure that they adapt, remain current in skills, and are poised to effectively supervise (Armstrong, Mackey, & Spear, 2004).

There are a number of limitations to this study. The most important limitation is the concern that the sample size may not be large enough or the sample may not be adequately representative for the results to be reliable. First, there is a potential selection bias (i.e., respondents may have interest in TP). The final sample is small, compared with the total number of psychiatry trainees nationally (i.e., approximately 225 residency programs with 6700 residents and 1200 fellows/year, including 900 fellows in the 140 child and adolescent psychiatry programs; 51+% of residents are female with 7% unreported) (American Psychiatric Association, 2019). Time, high volume email, and other interests were constraints in folks volunteering. We did not send out a survey to a specific group and did not have resources to target an entire organization. In retrospect, it may have been better to secure commitments from 10 programs, get co-investigators, go through the IRBs more formally. Second, a yes/no survey design is not as discerning as a Likert-type design. Its reliability/validity was not studied. Third, the survey did not technically define experience or exposure, so it could have been interpreted as clinical or didactic. Fourth, respondents' self-identified information that was not confirmed in terms of how they defined or rated their clinical experience – nor was it temporally connected to it – though the survey was looking at ranges of experience rather than specific quantitative data. Fifth, statistically significant correlations do not indicate causation. Sixth, more specific demographic and training data would be helpful (e.g., year of training, year when exposed to TP). Finally, there is no "gold standard" for norms by which to compare the respondents' data (i.e., normal anxiety about internet disconnections).

Despite the limitations, the current study provides valuable preliminary data about telepsychiatric use, interest, and attitudes that may serve as a foundation for further research and training.

Conclusions

Overall, telepsychiatry is effective for adult and child and adolescent populations. Interest in TP is substantial and growing among patients and trainees, which will facilitate its use for accessible, timely and high-quality care. Child psychiatrists are embracing technology and appear to be a leading force in its adoption and implementation. Training, experience, and supervision will reduce concerns and improve confidence. Ongoing research on the use of TP for psychiatric care, the sharing of curricular resources and teaching expertise among programs, and a focus on core residency training competencies will improve positive outcomes, including learner outcomes of skill, knowledge, and attitudes. Residency and fellowship training appears to be an ideal time for an integrated and inter-institutional TP curriculum. This is feasible with the support of academic and healthcare institutions, national professional organizations, and research funding.

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