Parent-Therapist Alliance and Technology Use in Behavioral Parent Training: A Brief Report

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Abstract

Researchers propose that technology has the capacity to promote therapeutic alliance; however, clinicians worry the opposite is true. Behavioral Parent Training (BPT), an approach that is reliant on the parent as the mechanism of change, is the standard of care for early-onset (3 to 8 years old) behavior disorders. Importantly, behavior disorders are among the most common reasons parents seek mental health services for their children; therefore, BPT affords an ideal context within which to better understand the potential interrelationship between technology and therapeutic alliance. To this end, this study examined the link between smartphone-enhancements to one BPT program and parent-therapist alliance in 9 families of children with early-onset behavior disorders. Findings suggest relative differences in patterns of alliance and use of the smartphone-enhancements *within* the technology-enhanced group, patterns that have implications for better understanding the impact of technology on the therapeutic process, the deployment of existing technology-enhanced services, and the development of future technology-enhanced services.

Keywords

Technology-Enhanced; Therapeutic Alliance; Behavioral Parent Training

Increasingly technology is incorporated into health care to meet growing mental healthcare needs. Indeed, the utility of technology as a tool for enhancing the reach and impact of mental health services has been demonstrated across a range of disorders and interventions (Gros et al., 2013), including behavior disorders (i.e., oppositional defiant disorder and conduct disorder), which co-occur with attention deficit/hyperactivity disorder and are among the most common reason for child mental health referrals (*removed for blind review*). Despite this, questions and concerns remain about how technology influences the therapeutic process, particularly among clinicians as it relates to alliance (i.e., the quality and nature of the relationship between the therapist and the client; Becker & Jensen-Doss, 2013).

Interest in alliance stems from a consistent small to moderate link between alliance and outcomes, and studies suggesting that stronger alliance is associated with increased treatment engagement and retention (Horvath, Del Re, Flückiger, & Symonds, 2011). In spite of the fact that researchers explicitly posit the capacity for technology-enhanced services to improve client engagement, participation, and help connect clients to the intervention by offering increased opportunity for modeling, practice, and support between session, which are core to alliance, alliance has rarely been investigated in the context of

technology-enhanced interventions (Bickman et al., 2004). Moreover, clinicians' primary concern about incorporating technology into service is its potential to compromise alliance, including worries that technology will interfere with the sense of warmth and empathy, limit the flexible application of the principles of therapy and limit therapeutic style, and decrease accountability (e.g., Becker & Jensen-Doss, 2013). Only 13% of clinicians interviewed, for example, perceived that they had the skills to establish alliance in the context of technology-enhanced approaches (Sucala et al., 2013).

To begin to address clinicians' concerns about the impact of technology on alliance, this study capitalized on and extended pilot data on a technology-enhanced version of Behavioral Parenting Training (BPT), an evidence-based treatment for families of young children with early onset (3 to 8 years old) behavior disorders. Importantly, the aim of the technology-enhancements to the standard BPT program were to increase parental sense of connection to and support from the therapist between sessions and, in turn, bolster competence and autonomy with skills outside of session and in the course of the family's daily life (*removed for blind review*). Thus, it was predicted that higher levels of parental technology use between clinic-based sessions would be associated with higher parent-therapist alliance in subsequent sessions. Additionally, building upon theory and data in the technology literature (Lopez, 2015; Rettie, 2008), it was expected that technology-enhancements that allowed for more immediate and direct connection, support, and feedback (e.g., videoconferencing) would have more of an impact on alliance development and maintenance than less relational aspects (e.g., survey completion).

Methods

Overview

Low income families are more likely to have a child with a behavior disorder, yet less likely to engage in and complete BPT (Kazdin, Holland, Crowley, & Breton, 1997; Masi et al., 2013). Thus, low income (< 150% federal poverty level) families (*N*=19) of young (3 to 8 years old) children with clinically-significant behavior problems (see *Measures)* were randomized to *Helping the Noncompliant Child* (HNC; McMahon & Forehand, 2003), a standard BPT program, or to *Technology-Enhanced HNC* (TE- HNC) (*removed for blind review*). Building upon the two-phase (I. Differential Attention; II. Clear Instruction Sequence), mastery-based (i.e., skill progression determined by individual parent progress), weekly sessions *(M* = 8 to 12 weeks/family) with daily home practice (15 minutes/day) and mid-week telephone check-ins standard for HNC, TE-HNC capitalized on the ownership of smartphones among low income families nationally (Pew, 2017; i.e., 96% ownership in our sample) by connecting with and supporting families between clinic-based sessions with five smartphone-enhancements (see *Measures).* Families randomized to TE-HNC group (*n* = 9) progressed through treatment more quickly and cost effectively with greater reductions in child problem behavior than families in HNC (*n* = 10) (*removed for blind review*). The current study extends these results by examining the link between technology use *within* the TE-HNC group and variability in parent- therapist alliance.

Participants.—Nineteen low-income children (3–8 years old) and a primary caregiver participated (see Table 1).

Measures.—Two trained and reliable independent evaluators used the *Working Alliance Inventory-Observer* form (WAI-O; Darchuk et al., 2000; Raue et al., 1991) to rate **parent-therapist alliance** at four points (1 early, 2 mid, and 1 late therapy) throughout the duration of treatment. The WAI-O (36-items) assesses the three primary dimensions (each 12-items) of alliance: bond, tasks, and goals (1 = *Very strong evidence against* to 7 = *Very strong evidence*). Prior to coding, the team attended training on the WAI-O coding system, observed three practice videos, and established inter-rater reliability of 82%.

Five smartphone-enhancements (each described in more detail below) were available to families in the TE-HNC group, including: 1) *Daily Surveys;* 2) a *Skills Video Series;* 3) *Video Recoding* a home practice; 4) a *Midweek Videoconference,* and 5) text message reminders. **Technology use** was defined by dividing the actual use of each enhancement by the number of opportunities for use to obtain an average score for each family per week. *Daily Surveys* use was defined by the number of surveys completed between sessions, divided by the number of days between sessions throughout treatment. *Daily Surveys* asked questions about skill practice and were responsive to caregiver input (e.g., if caregiver said s/he practiced skills at home on a given day, the survey asked about the quality of practice). *Skills Videos Series* use was defined by the number of times a caregiver reported watching *Skills Videos,* divided by the number of opportunities to watch *Skills Videos* throughout treatment. The *Skill Videos Series* included one approximately 3-minute video per each of 5 skills, which included psychoeducation, modeling, and reminders to practice. Caregivers were instructed to video record one home practice per week. Therefore, *Video recording of Skills Practice use* was defined by assessing the proportion of videos recorded between sessions to the number of opportunities for video recording throughout treatment. Therapists watched the video recording in order to tailor feedback. How often a caregiver completed the weekly mid-week call divided by the number of opportunities to complete a call throughout treatment defined *Midweek Videoconference* use. As is typical of HNC mid-week calls, the videoconference was used to check-in regarding skill practice and progress; however, the smartphone allowed it to be face-to-face. Two text message reminders were sent to families in the TE-HNC weekly to remind them about the scheduled midweek call and clinic-based session. Reminders were not included in the current analyses, however, because of the inability to track whether or not caregivers received and read the reminders.

Client satisfaction with the smartphone-enhancements was assessed via open-ended questions about the usefulness/helpfulness of each enhancement (e.g., *"What was most useful about the Daily Surveys?"),* as well as a Likert scale that assessed difficulty, usefulness, and convenience of each enhancement and the smartphone-enhancements overall.

Child problem behavior was measured with the *Eyberg Child Behavior Inventory* (ECBI; Eyberg & Pincus, 1999), a 36-item caregiver-report scale with two subscales: 1. Intensity scale or the frequency with which a child engages in problem behavior (131 clinically significant) and 2. Problem Scale or whether each behavior is viewed as problematic to

parent (15 clinically significant). Alpha for the Intensity Scale was 0.85 and Problem Scale was 0.76.

Results

All cases are included in Table 2; however, brief descriptions of three representative cases (i.e., Case 1, 4, and 7) are provided to illustrate the variability in "between-session" smartphone-enhancement use and subsequent alliance correspondence *within* the TE-HNC group. Case studies include demographics and a description of baseline child presenting problems, caregiver's overall subjective ratings of the technology's usefulness and convenience at post-treatment, as well as description of fluctuations in parent-therapist alliance relative to smartphone-enhancement use. Then, overall trends and patterns will be discussed below.

Case 1.

Case 1 was a Caucasian girl (age = 4) whose biological mother (age = 35, married) was the participating caregiver. At baseline, the mother reported her daughter's disruptive behavior to be in the clinical range on both the ECBI Intensity Scale (185; cutoff = 131) and Problem Scale (28; cutoff = 15). This caregiver described the technology as being somewhat convenient and overall found the smartphone-enhancements to be extremely useful.

This caregivers' overall alliance (i.e., total score) grew rapidly after the initial assessment and remained relatively high across treatment in comparison to the other TE-HNC families (210.88 compared to 152.03). This general pattern of alliance was consistent across each aspect of alliance (i.e., bond, task, and goal). Similarly, this caregiver's technology use was relatively consistent and high (i.e., 76% compared to 65%), particularly after the initial session.

Overall, this caregiver's pattern of technology use paralleled her alliance trajectory over the course of treatment. This trend seemed to be driven primarily by her completion of *Daily Surveys* and viewing of *Skills Videos,* but not *Midweek Videoconference* completion or *Video Recording* home practice. This caregiver's use of these weekly smartphone-enhancements (i.e., *Midweek Videoconference* and *Video Recording),* however, was high across treatment and may have also corresponded to the relatively stable and high alliance. Completion of the *Daily Surveys* seemed most closely linked with task and bond alliance trajectories (and to a lesser extent goal), while viewing *Skills Videos* were most closely paralleled task and goal alliance (and to a lesser extent bond).

Case 4.

Case 4 was a bi-racial male (age = 4), whose biological father (age = 31, married) participated. The father reported his son's problem behaviors to be below clinical range on the Intensity Scale (Intensity = 128) and slightly above the clinical range on the Problem Scale (Problem = 17). After treatment, this caregiver rated the overall convenience of the smartphone-enhancements as somewhat convenient and useful.

Overall, this caregiver's alliance was relatively stable and low until late treatment when it increased rapidly. Aggregate alliance was lower than the other families in the TE-HNC group (i.e., 185.00 compared to 194.35), and there was variability across alliance components, such that goal alliance was more stable and bond and goal alliance had more fluctuations. Similarly, across smartphone-enhancements (i.e., *Daily Survey* completion, *Skills Video* viewing, *Midweek Videoconference* completio*n*, and *Video recording* home practice) this family's technology use was below the other families' average (i.e., 49% compared to 70%).

This family's smartphone-enhancement use and alliance trajectories seem to diverge. Indeed, a pattern seemed to emerge in which increases in technology use are concomitant to weaker alliance. This pattern appeared across all of the smartphone-enhancements and seemed to be more strongly linked to task and bond alliance than goal alliance.

Case 7.

Case 7 was an African American girl (age = 6) whose biological father (age = 37, married) participated. At baseline, the father reported that his daughter exhibited disruptive behaviors in slightly above the clinical range on both ECBI scales (Intensity Score = 133; Problem score = 23). At post-assessment, this father indicated that he perceived the smartphone-enhancements to be extremely convenient and somewhat useful.

This father's pattern of total alliance, as well as bond, task, and goal alliance fluctuated over the course of treatment, and his aggregate alliance was weaker relative to the other TE-HNC families (i.e., 164.50 compared to 197.77). Regarding smartphone-enhancement use, this family's overall use exceeded the use of other TE-HNC families (i.e., 75% compared to 66%).

This caregiver's overall pattern of technology use did not seem linked to their overall technology use. In regard to specific smartphone-enhancements, no correspondence was observed between *Daily Survey* completion, *Video Recording* home practice, *Midweek Videoconference* completion and any of the aspects of alliance. There, however, this father's viewing of *Skills Videos* seemed to parallel alliance, particularly task and goal alliance. This pattern was more robust during early and mid-therapy.

Discussion

This study represents a preliminary, albeit we believe formative, step in understanding the impact of technology-enhanced services on the therapeutic process with children and families. Overall, findings suggested that technology use to some extent paralleled alliance development. Several smartphone-enhancement specific trends also emerged that may help inform both the design of future mental health technologies and the use of these tools in practice.

First, daily smartphone-enhancements (i.e., *Daily Surveys* and *Skills Videos)* seemed to be more closely linked to alliance than weekly enhancements (i.e., *Midweek Videoconference* and *Video Recording* home practice). These trends were to some extent unexpected. It was

predicted that the smartphone-enhancement use would most closely parallel bond alliance by promoting connection with the therapist between sessions. Indeed, smartphone-enhancement use more generally and use of the daily smartphone-enhancements more specifically seemed more linked to task and goal alliance than bond alliance. Although it would be remiss to assume that these weekly smartphone-enhancement in particular and the use of the enhancements more broadly do not influence alliance, particularly bond alliance without further research, it is possible that weekly contact is not enough to foster feelings of connection that generalize to common conceptions of bond alliance. These findings, however, should be interpreted cautiously due to sample size and may not generalize to other samples or technology-enhanced interventions. Future research with larger samples should investigate the optimal dose of technology use with more systematic methodologies, such as dismantling studies or newer Sequential Multiple Assignment Randomized Trial (SMART) designs (Danaher & Seeley, 2009).

It is important to consider that these patterns did not emerge for all families. In fact, for Case 4 there seems to be an inverse relationship between alliance and technology use, such that increased smartphone-enhancement use seemed to correspond with weaker alliance, particularly bond and task alliance. Of note, this caregiver found the smartphone-enhancements to be the least useful of the of TE-HNC families and indicated that these aspects were burdensome. As such, smartphone-enhancement use without perceived usefulness may hinder alliance development. This trend begs for future research to elucidate for whom technology-enhancements are helpful, and, also, for whom use may be harmful. Additionally, clinicians hoping to use smartphone-enhancements with clients should assess clients access to and attitudes, in order to avoid unintended deleterious effects on the relationship.

Relatedly, it is important to consider specific characteristics that differentiate families whose use of the enhancements and alliance seemed to correspond and those whose did not (or did to a lesser extent). In general, trends appeared to be more prominent earlier in treatment, for families of children with more severe baseline problem behaviors, and for caregivers who had overall more positive feelings about convenience and usefulness of the smartphone-enhancements. In regard to this pattern seeming to be more consistent in early and mid treatment, it is possible that after caregivers learn what to expect from treatment and treatment gains stabilize, established alliance (either strong or weak) is less influenced by the enhancements. Therefore, the smartphone-enhancements may help overcome caregiver's initial resistance, by helping caregivers understand the potential utility of the skills and overarching goal of treatment earlier in the therapeutic process. This may be particularly important for low-income families who are most vulnerable to dropout earlier in treatment.

Additionally, families with children exhibiting fewer behavior problems at baseline may have felt that the enhancements may not have been necessary (e.g., the perceived costs of use did not outweigh the perceived benefits). There has been much discussion in the intervention literature more generally (Foster, 2003) and technology-enhanced literature more specifically about the appropriate dose-response relationship (Rabbit et al., 2016). Again, future studies should consider a potential stepped-care approach to incorporating smartphone-enhancements into services where treatment options range from smartphone (or

other technology) only to group based treatment to individual treatment to individual treatment enhanced with technology.

Given the preliminary nature of the study, results should be interpreted cautiously. First, it remains to be determined whether findings generalize to child interventions that require less contact between the caregiver and therapist (e.g., interventions targeting child mood and anxiety). Furthermore, the sample size precluded more nuanced statistical models that include lagged effects (e.g., the interrelationship between alliance and technology), interpretation of significance levels, and, in turn, definitive conclusions regarding causality or directionality. Relatedly, the case descriptions begin to elucidate potential mediators and moderators of the link between technology use and alliance, such as skill acquisition, attitudes, and severity of problem behavior; however, we were unable to systematically explore the impact of these variables.

As technology tools continue to be designed and implemented in frontline service settings, it is essential that researchers and clinicians understand if and how it shapes the therapeutic process. This study preliminarily suggests that smartphone technology has the capacity to improve child outcomes without compromising (or enhancing) therapeutic alliance. Future work should build upon this formative data by replicating the pattern of findings with larger samples and more powerful statistical analyses, as well as by examining potential moderators (e.g., perceived usefulness). It is only through such continued work that technology has the potential to bridge, rather than broaden, the research-to-practice gap in mental health.

Acknowledgments

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Table 1.

Demographic and Behavioral Measures of Sample at Pre-assessment (n = 19).

Eligibility Criteria	
Inclusion	**Exclusion**
1. Income 150% of the poverty limit	1. Child had a development disability
2. Child between ages 3–8 years	2. Caregiver had current substance use, severe mood, or psychotic disorder diagnosis
3. Clinically significant DSM-IV DBD	3. Current DSS/CPS involvement
4. Child and caregiver speak English	

Measure	TE-HNC (n =9)			HNC (n=10)		
	%	**M**	**SD**	**%**	**M**	**SD**
Child Demographics						
Age (Years)		5.52	1.14		5.84	1.95
Gender						
Female	55.60			50.00		
Male	44.40			50.00		
Ethnicity/Race						
African American	14.29			28.57		
Biracial	28.57			0.00		
Caucasian	28.57			42.90		
Hispanic/Latino	28.57			28.57		
Caregiver Demographics						
Age (Years)		35.30	6.54		36.40	10.68
Gender						
Female	88.90			90.00		
Male	11.10			10.00		
Ethnicity/Race						
African American	14.29			37.50		
Biracial	14.29			0.00		
Caucasian	71.42			62.50		
Marital Status						
Single	11.10			20.00		
Married/common-law	44.40			50.00		
Divorced/separated	44.40			30.00		
Employment Status						
Unemployed	22.20			30.00		
Part-time	44.40			30.00		
Full-time	33.30			40.00		
Parent-Therapist Alliance						
Total Alliance		193.02	15.27		197.81	14.6
Bond		64.71	6.28		66.63	4.24
Goal		64.2	4.8		81.31	43.85
Task		64.05	4.62		65.54	5.55
Child Behavior						

Measure	TE-HNC (*n* =9)			HNC (*n*=10)		
	%	M	SD	%	M	SD
ECBI						
Intensity		156.89	26.42		139.69	27.69
Problem		23.67	5.70		22.30	5.81

Note. There were no significant differences between groups on all of the above-mentioned variables using *t*-tests or χ2.

Table 2.

Case Descriptions.

Case	Demographics				ECBI Change Scores				T1		T2		T3		T4	
	Caregiver		Child		Intensity		Problem									
	Age	Gender	Age	Gender	Pre	Post	Pre	Post	Alliance	Tech Use	Alliance	Tech Use	Alliance	Tech Use	Alliance	Tech Use
1	35	F	4	F	185	101	28	1	183	50	218.5	74.5	224	79.25	218	83.25
2	34	F	6	M	138	99	18	16	198	46.25	187.5	21.5	210	67.75	170	53.33
3	29	F	6	F	175	95	31	9	193	50	208.5	69	206.5	60	202	90
4	31	M	4	M	128	80	17	4	184.5	0	177.5	59.75	176.5	70.75	201.5	20.75
5	47	F	7	M	149	60	21	1	183	25	216	25	205.5	53.5	209.5	13.25
6	32	F	4	M	124	74	20	10	184.5	25	201	83.5	196	50	192	71.5
7	37	M	6	F	133	73	23	1	174	25	146.5	71.5	177	75	160.5	78.5

Notes. ECBI = *Eyberg Child Behavior Inventory*; Tech Use = The proportion of times an enhancement was used compared to opportunities for use; T = Time point of assessment.