

Diagnostic Category: Traumatic Brain Injury Discipline: Psychology

Reference	N	Intervention (n)	Telerehabilitation program's:	Platform & clinician's involvement	Outcomes
Country Study Design Quality (for RCTs)	Sample description (dx specifics, age, gender)	vs. Comparison (n) Frequency & duration	I. Focus II. Nature III. Target IV. Receiving client		Child-related outcomes Parent-related outcomes (+) significant between-group differences for RCTs or within group improvements for non-RCTs (-) no significant between-group differences for RCTs or within group improvements for non-RCTs
Aguilar et al., 2019 USA RCT PEDro score: 5/10 Fair quality	N= 113 Parents of children with TBI Child mean age: 5.37 ± 2.16 yrs Child age range: 3-9 yrs Child gender: 69M:44F Parent gender: 5M:108F	Internet-Based Interacting Together Everyday: Recovery After Childhood TBI (InTERACT) (n=39) vs. Abbreviated version of I-I-InTeract (Express) (n=36) vs.	I. Parental skills II. <i>I-InTERACT</i> : web-based intervention with psychoeducational modules and synchronous videoconferencing meetings with a trained therapist. The sessions provided information to parents about the behavioral and cognitive effects of early TBI, effective parenting skills, stress/anger management, and family	Web (didactic online modules) + Video conference monitoring from clinician. During synchronous Skype sessions (~40- 60 min), therapists reviewed session content (15-20 min), observed and coded the caregiver	At 6 months (follow-up): Express vs. I-InTERACT <i>(+) Executive Functioning behaviors: Behavior Rating Inventory of Executive Function (BRIEF) or BRIEF-Preschool</i> <i>(-) Internalizing: Child Behavior Checklist (CBCL)</i> <i>(-) Anxiety/Depression: CBCL—Anxiety/depression subscale</i> <i>(-) Withdrawn/Depressed: CBCL—Withdrawn/depressed subscale</i> <i>(-) Somatic Complaints: CBCL—Somatic complaints subscale</i>

		<p>Internet Resource Comparison (IRC) (n=38)</p> <p><i>I-InTERACT:</i></p> <p>40-60min/session; 1 session/week or bi-weekly for 10-14 sessions (4 optional sessions).</p> <p><i>Express:</i></p> <p>1 session/week or bi-weekly for 7 sessions.</p>	<p>communication strategies.</p> <p><i>Express:</i> The Express program was an abbreviated 7-session intervention focusing exclusively on effective parenting skills. Videoconferences with the therapist incorporated skill review and live coaching while implementing the skills. Express did not include didactic information about TBI or training in stress, anger, or antecedent behavior management.</p> <p><i>IRC:</i> Families were provided online links to TBI and parenting resources and instructed to review them for 1 hour or more per week. Families were provided with a log and asked to complete and turn in Web site logs at the follow-up, including the Web sites they visited and the amount of time they spent on those Web sites.</p> <p>III. Child + Parent</p> <p>IV. Parent alone</p>	<p>playing with the child (5 min), and provided live coaching to the parent while he/she played with their child (20-30 min).</p>	<p>Express vs. IRC</p> <p>(-) <i>Executive Functioning behaviors:</i> Behavior Rating Inventory of Executive Function (BRIEF) or BRIEF-Preschool</p> <p>(-) <i>Internalizing:</i> Child Behavior Checklist (CBCL)</p> <p>(-) <i>Anxiety/Depression:</i> CBCL—Anxiety/depression subscale</p> <p>(+) <i>Withdrawn/Depressed:</i> CBCL—Withdrawn/depressed subscale</p> <p>(-) <i>Somatic Complaints:</i> CBCL—Somatic complaints subscale</p> <p>I-InTERACT vs. IRC</p> <p>(-) <i>Executive Functioning behaviors:</i> Behavior Rating Inventory of Executive Function (BRIEF) or BRIEF-Preschool</p> <p>(-) <i>Internalizing:</i> Child Behavior Checklist (CBCL)</p> <p>(-) <i>Anxiety/Depression:</i> CBCL—Anxiety/depression subscale</p> <p>(-) <i>Withdrawn/Depressed:</i> CBCL—Withdrawn/depressed subscale</p> <p>(-) <i>Somatic Complaints:</i> CBCL—Somatic complaints subscale</p>
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<p>Mast et al., 2014</p> <p>USA</p> <p>Quasi-experimental study</p>	<p>N= 9</p> <p>Families of children with brain injury that resulted in a lowest recorded Glasgow Coma Scale (GCS) score of 12 or less, or there was evidence of brain injury visible on computerized tomography (CT) or magnetic resonance imaging (MRI)</p> <p>Child age range: 3-9 yrs Mean age and gender: UTD</p> <p>Parent gender: 2M:5F</p>	<p>Internet-based Interacting Together Everyday: Recovery After Childhood TBI (I-InTERACT) (n=5)</p> <p>vs.</p> <p>Internet Resource Comparison (IRC) (n=4)</p> <p>I-InTERACT: 40-60min/session; 1 session/week or bi-weekly for 10-14 sessions (4 optional sessions).</p>	<p>I. Positive parenting skills and child behavior</p> <p>II. I-InTERACT: a program incorporates aspects of several existing parenting skills programs (particularly PCIT) and combines didactics and live coaching that emphasize positive parenting skills and consistent discipline methods. the program also teaches parents about antecedent behavior management strategies to help set their child up for success. In addition, the program includes didactic information on the cognitive and behavioral sequelae of head injury and information for parents regarding communication and stress management.</p> <p>IRC: Families randomized to the IRC group were provided access to a study website that had links to a variety of relevant web-based resources, including TBI educational material, associations, support</p>	<p>Web (didactic online modules) + videoconference monitoring from clinician.</p> <p>There was a weekly synchronous videoconference session with the therapist during which parents reviewed the completed web module, role-played new parenting skills with the therapist, and practiced these skills in vivo while playing with their child and receiving simultaneous “bug-in-the-ear” feedback.</p> <p>Families who did not complete any of the supplemental sessions were contacted by phone or email bi-weekly between their ninth and tenth core session (total of four contacts) to discuss how the I-InTERACT</p>	<p>At 6 months (follow-up):</p> <p><i>(+) Intensity of Child oppositional and conduct problems: Eyberg Child Behavior Inventory (ECBI); Total Intensity T-scores</i></p> <p><i>(-) Total Child oppositional and conduct problems: ECBI; Total Problems T-scores</i></p> <p><i>(-) Behavioral and emotional functioning—Internalizing problems: Child Behavior Checklist (CBCL); internalizing scale</i></p> <p><i>(-) Behavioral and emotional functioning—Externalizing problems: CBCL; Externalizing scale</i></p> <p><i>(-) Behavioral and emotional functioning—Total problems: CBCL; Total problems scale</i></p> <p>Child-directed plays (segment where child leads the play)</p> <p><i>(+) Parent-child interactions—labeled praises: Dyadic Parent-Child Interaction Coding System (DPICS); Child-directed play</i></p> <p><i>(+) Parent-child interactions—reflective statements: DPICS; Child-directed play</i></p> <p><i>(+) Parent-child interactions—ask children questions: DPICS; Child-directed play</i></p> <p><i>(-) Parent-child interactions—giving commands: DPICS; Child-directed play</i></p>
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			<p>groups, recovery, and coping skills and parenting resources. Also included were links to websites focused on families and caregivers, as well as links to brain and neurology resources.</p> <p>III. Youth + Parent</p> <p>IV. Youth + Parent</p>	<p>practice and principles were going at home</p>	<p>Parent-directed plays (segment where parent leads the play)</p> <p>(+) Parent-child interactions—labeled praises: DPICS; Parent-directed play (+) Parent-child interactions—reflective statements: DPICS; Parent-directed play</p> <p>Children in the I-InTERACT group complied with their parents' commands 90% (SD = 18%) of the time compared with 50% (SD = 0%) of the time for the children in the IRC group ($p = .02$).</p> <p>The percentage of times that parents in the I-InTERACT group provided labeled praises following compliance with a direct command was marginally higher than that of parents in the IRC group ($p = .099$)</p> <p>Note: Program feedback: All but one of the parents noted that the website helped them to link concerns about the child's behavior back to their child's TBI that had occurred years earlier. All participants also noted the value of the specific behavior management skills that they learned.</p>
Narad et al., 2015	N=132 Families with adolescents who have TBI	Counselor-Assisted Problem-Solving (CAPS) (n=65)	I. Family functioning after TBI: problem solving, communication skills, self-	Web (didactic online modules) + Video conference monitoring	At 6 months (follow-up):

<p>Petranovich et al., 2015</p> <p>Wade et al., 2014 USA</p> <p>RCT</p> <p>PEDro score: 6/10 High quality</p>	<p>Mean age: 14.83 ± 1.73</p> <p>Age range: 12-17 yrs</p> <p>57M:75F</p> <p>Caregivers: 86% mothers 10% fathers 4% grandparents</p>	<p>vs.</p> <p>Internet Resource Comparison (IRC) (n=67)</p> <p>CAPS: 1 in-person initial session for 90min, followed by 30-45min/session for 7-11 sessions provided over a period of 6 months.</p> <p>IRC: 1 hour/week</p>	<p>regulation and anger management</p> <p>II. CAPS: web-based, manualized, evidence-informed intervention with counselor videoconferencing comprising 7 to 11 sessions. An initial face-to-face session was completed by the counselor in the family home (to identify goals that the family wanted to address during intervention). The adolescent + 1 caregiver were required to attend each session. All subsequent sessions consisted of self-guided online didactic content regarding different skills (problem solving, communication, self-regulation, anger management) video clips modeling the skills, and exercises and assignments to practice new skills.</p> <p>IRC: Families in the IRC group were given access to a website with links to online resources including links to local, state, and</p>	<p>from clinician following each session.</p> <p>During monitoring Skype sessions (n=6), the counselor reviewed the online materials and practiced the skills using scenarios that were identified by the family.</p>	<p>(-) <i>Parent-teen conflicts: Problem-Solving Discussion Rating Scale (PSDRS)</i>—Teen-reported (-) <i>Problem-solving: Family Assessment Device Problem-solving scale (FAD-PS)</i>—Teen-reported (-) <i>Effective communication: Iowa Family Interaction Rating Scale (IFIRS)</i>—Teen-reported</p> <p>(-) <i>Parent-teen conflicts: PSDRS</i>—Parent-reported (-) <i>Problem-solving: FAD-PS</i>—Parent-reported (+) <i>Effective communication: IFIRS</i>—Parent-reported (+) <i>Global psychiatric symptoms and distress: Symptom Checklist-90R: Global Severity Index (SCL-90-GSI)</i> * *for low-income families **no significant difference in high-income families</p> <p>(-) <i>Parental depression: Center for Epidemiological Studies Depression Scale (CES-D)</i> (+) <i>Self-perceived Parenting efficacy: Caregiver Self-Efficacy Scale (CSES)</i> * *Among non-frequent users. However, non-significant among frequent users.</p> <p>At 12 months (follow-up):</p>
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			<p>national brain injury associations and to sites specific to pediatric brain injury. Families were encouraged to spend at least an hour each week accessing information regarding pediatric brain injury throughout the intervention period and to track the sites that they visited in a logbook.</p> <p>III. Youth + parent</p> <p>IV. Youth + parent</p>	<p>(-) <i>Parent-teen conflicts: Problem-Solving Discussion Rating Scale (PSDRS)</i>—Teen-reported (-) <i>Problem-solving: Family Assessment Device Problem-solving scale (FAD-PS)</i>—Teen-reported (-) <i>Effective communication: Iowa Family Interaction Rating Scale (IFIRS)</i>—Teen-reported</p> <p>(-) <i>Parent-teen conflicts: PSDRS</i>—Parent-reported (-) <i>Problem-solving: FAD-PS</i>—Parent-reported (-) <i>Effective communication: IFIRS</i>—Parent-reported (+) <i>Global psychiatric symptoms and distress: Symptom Checklist-90R: Global Severity Index (SCL-90-GSI) *</i> *for low-income families **no significant difference in high-income families</p> <p>(-) <i>Parental depression: Center for Epidemiological Studies Depression Scale (CES-D)</i> (-) <i>Self-perceived Parenting efficacy: Caregiver Self-Efficacy Scale (CSES)</i></p> <p>At 18 months (follow-up): (-) <i>Parent-teen conflicts: Problem-Solving Discussion Rating Scale (PSDRS)</i>—Teen-reported</p>
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					<p>(-) <i>Problem-solving</i>: Family Assessment Device Problem-solving scale (FAD-PS)—Teen-reported</p> <p>(-) <i>Effective communication</i>: Iowa Family Interaction Rating Scale (IFIRS)—Teen-reported</p> <p>(-) <i>Parent-teen conflicts</i>: PSDRS—Parent-reported</p> <p>(-) <i>Problem-solving</i>: FAD-PS—Parent-reported</p> <p>(-) <i>Effective communication</i>: IFIRS—Parent-reported</p> <p>(+) <i>Global psychiatric symptoms and distress</i>: Symptom Checklist-90R: Global Severity Index (SCL-90-GSI) *for low-income families **no significant difference in high-income families</p> <p>(-) <i>Parental depression</i>: Center for Epidemiological Studies Depression Scale (CES-D)</p> <p>(-) <i>Self-perceived Parenting efficacy</i>: Caregiver Self-Efficacy Scale (CSES)</p>
<p>Narad et al., 2019</p> <p>Wade et al., 2017</p> <p>USA</p>	<p>N= 152</p> <p>Children and adolescents hospitalized for complicated mild to severe traumatic brain injury in the previous 18 months.</p> <p>Mean age: 14.87 ± 2.04</p>	<p>Teen Online Problem-Solving with Family (TOPS-F) (n=49)</p> <p>vs.</p> <p>Teen Online Problem-Solving-</p>	<p>I. Family functioning</p> <p>II. TOPS-F: web-based, family-centered problem-solving intervention designed to support adolescent and family outcomes following pediatric TBI. The intervention addressed common challenges</p>	<p>Web (review of self-guided web content, didactic online modules) + video conference</p> <p>Monitoring from clinician</p> <p>During weekly/bi-weekly skype</p>	<p>At 6 months (follow-up):</p> <p>TOPS-F vs. TOPS-TO:</p> <p>(+) <i>Parental depression</i>: Center for Epidemiological Studies Depression Scale (CES-D)* *for 2-parent households **no significant difference for single parents</p>

<p>RCT</p> <p>PEDro score: 5/10 Fair quality</p>	<p>Age range: 11-18 yrs</p> <p>105M:47F</p>	<p>Teen Only (TOPS-TO) (n=51)</p> <p>vs.</p> <p>Internet Resource Comparison (IRC) (n=52)</p> <p>TOPS-F and TOPS-O: 1 in-person initial set-up session, followed by 1 session/week or bi-weekly for 10-18 sessions (4-8 optional sessions), over a period of 6 months.</p>	<p>following TBI by providing psychoeducation as well as teaching adolescents and their parents a 5-step problem solving process (Aim, Brainstorm, Choose, Do, and Evaluate) that was generalizable to concerns beyond those addressed during the study.</p> <p>TOPS-TO: Content for TOPS-TO was adapted from the TOPS-F intervention based on focus groups with adolescents with TBI and their parents. These adaptations and refinements included shortening sessions (or dividing content into 2 sessions), editing content to make it more applicable for teen-only delivery, and increasing interactive activities.</p> <p>IRC: Families in the IRC condition were provided access to a web page with external links to the same online resources that were provided to families in TOPS-F and TOPS-TO. Adolescents and families</p>	<p>sessions, participants met with their clinician to discuss content and proactive problem solving.</p>	<p>(-) <i>Parental psychological distress</i>. Symptom Checklist-90R: Global Severity Index (SCL-90-GSI)</p> <p>(+) <i>Global family functioning</i>. Family Assessment Device (FAD-GF) * *for single parents. No group differences for 2-parent households.</p> <p>(+) <i>Family cohesion</i>. Parent-Adolescent Relationship Questionnaire (PAR-Q)* *For 2-parent households.</p> <p>(-) <i>Parent-Adolescent Conflict</i>. Interaction Behavior Questionnaire-Short Form (IBQ)</p> <p>Note: Adherence measures (sessions completed, dropout rates, duration of treatment engagement, and rates of program completion) were similar across treatment groups. Overall, teen and parent reported satisfaction was high and similar across groups.</p> <p>Teens spent a similar amount of time on the TOPS website across groups.</p> <p>Parents in the TOPS-F spent more time on the TOPS website than those in the TOPS-TO group. Parents in the TOPS-F group rated the TOPS website as more helpful than those in the TOPS-TO group</p> <p>TOPS-F vs. IRC:</p>
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			<p>were encouraged to spend 1 hour each week using the Internet to access information regarding pediatric TBI.</p> <p>III. Mixed</p> <p>IV. Child/youth + parent</p>	<p>(+) <i>Parental depression</i>: Center for Epidemiological Studies Depression Scale (CES-D)* *for 2-parent households **no significant difference for single parents</p> <p>(-) <i>Parental psychological distress</i>: Symptom Checklist-90R: Global Severity Index (SCL-90-GSI)</p> <p>(-) <i>Global family functioning</i>: Family Assessment Device (FAD-GF) *for 2-parent households</p> <p>(-) <i>Family cohesion</i>: Parent-Adolescent Relationship Questionnaire (PAR-Q)</p> <p>(-) <i>Parent-Adolescent Conflict</i>: Interaction Behavior Questionnaire-Short Form (IBQ)</p> <p>TOPS-TO vs. IRC:</p> <p>(-) <i>Parental depression</i>: Center for Epidemiological Studies Depression Scale (CES-D)* *for single parents</p> <p>(-) <i>Parental psychological distress</i>: Symptom Checklist-90R: Global Severity Index (SCL-90-GSI)</p> <p>(-) <i>Global family functioning</i>: Family Assessment Device (FAD-GF)* *for 2-parent households</p> <p>(+) <i>Family cohesion</i>: Parent-Adolescent Relationship Questionnaire (PAR-Q)</p>
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					(-) <i>Parent-Adolescent Conflict: Interaction Behavior Questionnaire-Short Form (IBQ)</i>
Raj et al., 2015	N= 37 Primary caregivers of children who sustained a moderate/complicated mild to severe TBI; a lowest recorded Glasgow Coma Scale (GCS) score of 12 or less, or a higher GCS score coupled with evidence of brain injury visible on computed tomography scan or magnetic resonance image. Child mean age: 5.43 ± 2.11 yrs Child age range: 3-9 yrs	I-InTERACT (n= 20) vs. Internet Resource Comparison (IRC) (n=17) I-InTERACT: 40-60min/session; 1 session/week or bi-weekly for 10-14 sessions (4 of which are optional sessions)	I. Parent psychological distress II. I-InTERACT: a program is a Web-based parenting intervention designed to support parents of children with TBI. The program combines features of parent-child interaction therapy (PCIT) with training in parent stress management and anger control, as well as education regarding the consequences of pediatric TBI. It also incorporates video clips that model parenting skills taught in the program. A subset of optional/supplemental sessions address parent-focused concerns such as managing marital conflict and managing feelings of guilt and grief. IRC: Parents in the IRC group were provided with access to a study Web site	Web (review of self-guided web content, didactic online modules) + video conference monitoring from clinician During the videoconference call (via Skype or Cisco Movi Client) with the therapist to discuss content from the Web-based session and practice positive parenting skills while receiving “bug-in-the-ear” feedback from the therapist (ie, the parents wore an earpiece and received live coaching from the therapist while they played with their child)	At 6 months (follow-up): <i>(+) Parental psychological distress: Symptom Checklist-90R: Global Severity Index (SCL-90-GSI) *</i> *For families with low-income. **For families with high income: No significant change in SCL-90-GSI between groups. <i>(-) Parent depression: Center for Epidemiological Studies Depression Scale (CES-D)</i> <i>(-) Parent stress: Parent Stress Index (PSI)</i> <i>(-) Perceived parenting efficacy: Caregiver Self-Efficacy Scale (CSES)</i> For Abusive Head Trauma (AHT) subsample: <i>(-) Parental psychological distress: Symptom Checklist-90R: Global Severity Index (SCL-90-GSI)</i> <i>(-) Parent depression: Center for Epidemiological Studies Depression Scale (CES-D)</i> <i>(-) Parent stress: Parent Stress Index (PSI)</i> <i>(-) Perceived parenting efficacy: Caregiver Self-Efficacy Scale (CSES)</i>

			<p>that contained links to a variety of Web resources pertinent to pediatric TBI (this Web site was also accessible to families in the I-InTERACT group). These links included support groups for parents affected by pediatric TBI, various TBI organizations and associations, and Web sites providing information on TBI and recovery.</p> <p>III. Child + parent</p> <p>IV. Parent alone</p>		
<p>Woods et al., 2012</p> <p>Australia</p> <p>Quasi-experimental</p>	<p>N= 48</p> <p>Caregivers of children with mild, moderate, and severe ABI</p> <p>Child mean: age: 8.38 ± 2.08 yrs</p> <p>Child age range: 3-12 yrs</p> <p>Child gender: 29M:19F</p> <p>Caregiver gender: 2M:46F</p>	<p>Singpost telephone-support (n=25)</p> <p>vs.</p> <p>Signposts in group, f2f (n=23)</p> <p>2.5hrs/meeting; 3 meetings over 6 weeks.</p>	<p>I. Parenting skills and management of challenging behaviors.</p> <p>II. Singpost telephone-support: Parents completed the same workbook and intervention as in the f2f format in a self-directed fashion. They additionally received a phone call from the clinician after each post-out to discuss key-elements of the program.</p> <p>Signposts (f2f): Signposts</p>	<p>Calls only</p> <p>Parents were contacted by phone call following each post-out from a Signposts practitioner to discuss key elements of the program and/or any difficulties they may be experiencing.</p>	<p>At 5 months (post-treatment):</p> <ul style="list-style-type: none"> Of the 25 parents who received the program via Telephone support (TS) 14 parents strongly agreed (56.0%), nine agreed (36.0%), and 2 mildly agreed (8.0%) that the telephone calls were a useful part of the program. Of the 23 parents in the Group-Support (GS)-group 18 strongly agreed (78.3%) and 5 (21.7%) agreed that the face-to-face groups were helpful.

			<p>resources for the family consist of 9 information booklets, including the adjunct ABI Booklet, a DVD, and Workbook. Parents are presented the materials through the core information booklets with time in between to practice the skills which they have been taught. The DVD comprises a series of 33 scenes which illustrate specific points made in the booklets. As parents work through the materials and watch the DVD scenes, they can document their thoughts and observations in their Workbook.</p> <p>III. Child + Parent</p> <p>IV. Parent alone</p>		<ul style="list-style-type: none">• All 48 of the parent respondents approved of the skills taught (agree or strongly agree), 85% (TS) and 81% (GS) felt that the materials were helpful for managing behavior and for teaching new skills.• Overall, 81% of parents reported they were more confident in managing their children and almost all parents reported that they understood the written materials and found the DVD to be useful.• All parents rated a high level of feasibility for all Signposts materials
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