

Decrease in Behavioral Problems and Trauma Symptoms Among At-Risk Adopted Children Following Web-Based Trauma-Informed Parent Training Intervention

Erin Becker Razuri, Amanda R. Hiles Howard, Sheri R. Parris, Casey D. Call,
Jamie Hurst DeLuna, Jordan S. Hall, Karyn B. Purvis, and David R. Cross

TCU Institute of Child Development, Texas Christian University, Fort Worth, Texas, USA

Children who have experienced early adversities are at risk for behavioral problems and trauma symptoms. Using a two-group, pre–post intervention design, the authors evaluated the effectiveness of an online parent training for Trust-Based Relational Intervention, a trauma-informed, attachment-based intervention, in reducing behavioral problems and trauma symptoms in at-risk adopted children. Children of parents in the treatment group ($n = 48$) demonstrated significant decreases in behavioral problems and trauma symptoms after intervention. Scores for children in a matched-sample control group did not change. Findings suggest this intervention can effectively reduce behavioral problems and trauma symptoms in children with histories of adversities.

Keywords: Trust-Based Relational Intervention, trauma-informed intervention, attachment intervention, out-of-home placement, adopted children, parent training, trauma symptoms

Over 240,000 children have been adopted into the United States from other countries since 1999 (U.S. Department of State, adoption.state.gov/about_us/statistics.php). Most of these children were previously institutionalized and at risk for multiple traumas, including maltreatment and deprivation (Gunnar, van Dulmen, & The International Adoption Project Team, 2007). In addition, 50,000 children are adopted from U.S. welfare agencies each year after having been removed from their homes and placed in state care situations such as foster care (U.S. Department of Health and Human Services, 2011). We know that approximately 68% of Americans have experienced some type of childhood trauma (Copeland, Keeler, Angold, & Costello, 2007), and this statistic is likely higher with youth who have experienced domestic or international adoption. Such children with histories of out-of-home care have all experienced separation from their primary attachment figures, and may have experienced traumatic circumstances such as witnessing violence in the home, armed conflict, exposure to natural disasters, or other chaotic or threatening environments (Hoskbergen & van Dijkum, 2001). In particular, those who have experienced repeated trauma due to maltreatment, abuse, and/or neglect often experience complex and individualized

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Address correspondence to Sheri R. Parris, TCU Institute of Child Development, Texas Christian University, TCU Box 298921, Fort Worth, TX 76129, USA. E-mail: s.r.parris@tcu.edu

neurodevelopmental deficits, leading to maladaptive functioning, including emotional and behavioral issues (Painter & Scannapieco, 2013; Woolgar, 2013) that can persist and worsen over time (van der Vegt, van der Ende, Ferdinand, Verhulst, & Tiemeier, 2009; Verhulst, 2000). Such early adversity is often experienced by children with histories of out-of-home care, including institutional and foster placements (for a review of the literature, see Dovran, Winje, Arefjor, & Haugland, 2012; Euser, Alink, Tharner, van IJzendoorn, & Bakersmans-Kranenburg, 2013, 2014; Hobbs & Hobbs, 1999; Johnson & Dole, 1999). Thus, previously institutionalized internationally adopted children as well as domestically adopted children are at high risk for behavioral problems (Groza & Ryan, 2002; Gunnar et al., 2007; Kočovská et al., 2012). Specifically, these behavioral problems can include internalizing behaviors (Fisher, Ames, Chisholm, & Savoie, 1997), externalizing behaviors (Hoksbergen, Rijk, vanDijkum, & ter Laak, 2004; Merz & McCall, 2010; Verhulst, 2000), attention problems (Groza, 1999; Gunnar et al., 2007; Merz & McCall, 2010), thought problems (Groza, 1999; Hoksbergen et al., 2004), and social problems (Gunnar et al., 2007; Hoksbergen et al., 2004). These behavioral problems can be intense and/or frequent (e.g., Groza & Ryan, 2002; Gunnar et al., 2007; MacLean, 2003; van der Vegt et al., 2009).

However, despite evidence that many of the maladaptive behaviors in foster and adoptive children stem from early trauma, there are very few empirical studies investigating such trauma in these populations (Dovran, Winje, Arefjord, & Huagland, 2012; Hoksbergen & van Dijkum, 2001). One study, however, suggests that children in foster care exhibit symptoms of posttraumatic stress disorder (PTSD) at more than twice the rate as combat veterans (Pecora, White, Jackson, & Wiggins, 2009). Another study correlates survival-seeking behavior in post-institutionalized children with PTSD (Hoksbergen et al., 2003). One factor that may make it difficult to assess trauma in foster and adopted children, including previously institutionalized children, are the frequently incomplete and/or unreliable records regarding their histories and pre-adoption circumstances (Gunnar, Bruce, & Grotevant, 2000). The type of trauma most commonly experienced by children is complex trauma (Greeson et al., 2011), which has not yet been included in the *Diagnostic and Statistical Manual of Mental Disorders*, currently in the 5th edition (*DSM-5*; American Psychiatric Association, 2013). PTSD, which is listed in the *DSM-5*, results from an acute trauma (exposure to a single overwhelming event such as a natural disaster). Complex trauma, however, is described as “multiple, chronic, and prolonged, developmentally adverse traumatic events, most often of an interpersonal nature . . . and early-life onset” (van der Kolk, 2005, p. 402). Complex trauma includes physical, sexual, and emotional abuse; and/or neglect by caregivers early in life and/or witnessing domestic violence (Greeson et al., 2011).

Children and youth suffering from complex trauma most often exhibit disorders related to attachment systems, affect regulation, physiology, dissociation, behavioral control, cognition, and self-concept (Cook, Blaustein, Spinazolla, & van der Kolk, 2003) and behaviors can include maintaining a state of hyperarousal or hypervigilance, with a tendency to overreact to stimuli that may go unnoticed by others (Perry, Pollard, Blakley, Baker, & Vigilante, 1995). There is also evidence that youth with histories of trauma or maltreatment often have sensory processing disorders (SPD) that can cause children to over- or under-react to tactile sensations, noises, smells, tastes, or other sensory input and lead to difficulties with behavior, social skills, motor skills, and academic performance (Cermak, 2009; Cermak & Groza, 1998; Gourley, Wind, Henninger, & Chinitz, 2013; Purvis & Cross, 2007; Purvis, McKenzie, Cross, & Razuri, 2013). In addition, Milot and colleagues (Milot, Éthier, St-Laurent, & Provost, 2010) suggest that the association between behavioral problems and maltreatment might be mediated by trauma symptoms.

Trust-Based Relational Intervention as Trauma-Informed Care

Because behavioral problems in adopted children often stem from trauma, traditional parenting practices are often ineffective in alleviating these behaviors because they do not address the

underlying cause of the behavior. Thus, adoptive parents should be made aware of trauma-informed interventions that have the capability of addressing the needs of children whose histories of early adversity put them at risk for a range of behavioral and developmental deficits (Ko et al., 2008). van der Kolk (2005) identified three factors, later discussed by Bath (2008) as the three main “pillars” that should be included in any program designed to treat complex trauma. These are: (a) development of safety, (b) promotion of healing relationships, and (c) teaching of self-management and coping skills. These elements are consistent with the three principles of Trust-Based Relational Intervention® (TBRI®) which are: (a) Empowering (attention to ecological and physiological needs), (b) Connecting (attention to relational and attachment needs), and (c) Correcting (attention to behavioral needs).

First, through the Empowering principles, parents are taught practices to help children feel safe and nurtured in their environment and also to ensure their physical needs are met (Bronfenbrenner & Morris, 1998; Lickliter, 2008). Through the ecological strategies, parents learn to manage transitions and establish rituals that provide structure and connection. Through the physiological strategies parents learn ways to provide regular physical activity, sensory experiences, and ways to meet nutritional and hydration needs. The Empowering Principles enable caregivers to learn how to enhance a child’s capacity for self-regulation, decrease the likelihood of negative and disruptive incidents, and increase the likelihood of successful “Connecting and Correcting.”

Second, Connecting Principles are based on attachment theory and research (see Cassidy & Shaver, 2008; Siegel, 2012). They include the strategies of: (a) mindful awareness, such as an awareness of the child, the self, and the environment, and (b) engagement, such as valuing eye contact, playful interaction, and healthy touch. The Connecting Principles are not only important in their own right, as essential mechanisms for building trusting relationships, but are also the engine that makes both the Empowering and the Correcting Principles work in practice.

Researchers have found that interventions targeting attachment are necessary in helping children overcome issues stemming from multiple or chronic early adversities (Cook et al., 2005; Dozier, Albus, Fisher, & Sepulveda, 2002; Hawk & McCall, 2010; MacLean, 2003). Improving the quality of caregiving, including increasing caregiver sensitivity, can lead to improvements in children’s behavior and attachment (Woolgar, 2013). Likewise, providing parents with education about increasing their sensitivity and empathy toward their adolescents has led to behavioral improvements as well (Giannotta, Ortega, & Stattin, 2013). Improving the quality of the child–caregiver relationship improves physical, mental, social, and emotional development in at-risk children (Dozier et al., 2002; St. Petersburg-USA Orphanage Research Team, 2008). While behavioral change is a surface goal for intervention, the deeper goal is to improve the relationship between the child and caregiver. This relationship has been called the “critical transducer of change” (Dozier et al., 2002, p. 856).

Finally, the Correcting principles include both proactive and responsive strategies that aid in preventing or reducing behavioral challenges and improving self-regulation skills (Colvin & Sugai, 1988; Colvin, Sugai, & Patching, 1993). The strategies associated with Correcting consist of: (a) proactive strategies, such as teaching Life Value Terms and Behavioral Scripts during playful interactions, and (b) responsive strategies, such as using the IDEAL Response[®] and Levels of Response to respond to challenging behavior (Purvis, Cross, Dansereau, & Parris, 2013). The Correcting principles are used to deliberately shape behavior, but will only be effective to the extent that their practice is based on a firm foundation of Empowering and Connecting. A more detailed explanation of TBRI and how the principles are applied can be found in previous publications (e.g., Purvis et al., 2013). Providing caregivers with training that help them to understand challenging behaviors and their causes; providing strategies to help children improve behaviors; and building caregiver efficacy, confidence, and ability to cope with stress can increase positive outcomes for both caregivers and children (Morgan & Baron, 2011). Through TBRI training, caregivers learn to see the needs of children who have experienced complex trauma and what steps they can take to meet those needs.

Online Parent Training

While TBRI is an intervention that can be helpful to parents of adoptive children, delivering this training through in-person training sessions can be prohibitive due to space limitations at brick-and-mortar venues, as well as travel, expense, and time prohibitions. In addition, online training is becoming an increasingly viable alternative to in-person training due to technology developments and availability, and lower costs to administer training (Koljatic, Silva, Varas, & Vergara, 2004). For instance, several studies have found the same or better learning gains for students in fully online college courses when compared to courses taught via face-to-face instruction, or have a blended face-to-face and online approach (Germain, Jacobson, & Kaczor, 2000; Koljatic et al., 2004; Thirunarayanan & Perez-Prado, 2001). In one study, online training for therapists to learn an evidence-based behavioral intervention for young children with autism spectrum disorders was equally as effective as live instruction in the intervention (Vismara, Young, Stahmer, Griffith, & Rogers, 2009).

THE CURRENT STUDY

TBRI has been used in a number of settings to affect change, including intensive home programs (McKenzie, Purvis, & Cross, 2014), residential treatment centers (Purvis, Cross, Jones, & Buff, 2012; Purvis, McKenzie, Razuri, Cross, & Buckwalter, 2014), and schools (Parris et al., 2014), but the authors in the current study are the first to use a randomized sample, pre–post design with a control group to evaluate the effectiveness of the intervention. Consistent with research demonstrating the efficacy of trauma-informed, attachment-based interventions on behavioral outcomes for at-risk children (Dozier et al., 2002) and with research suggesting that trauma symptoms account for the relationship between early adversity and behavioral problems (Milot et al., 2010), it is expected that behavioral problems and trauma symptoms will decrease for at-risk adopted children whose parents participate in a TBRI trauma-informed parent-training program.

METHOD

Participants

Participants consisted of adoptive parents who responded to a recruitment notice for a study seeking parents interested in learning about the basic relationship and developmental needs of adopted children with histories of early adversities and practical strategies to improve outcomes for these children. Recruitment notices were posted on the university website, distributed by e-mail through child welfare professionals across the United States, and e-mailed to parents on the research institute's distribution list. Eligible participants included parents of children who were domestically or internationally adopted, were between the ages of 5 and 12 at the beginning of the study, and had resided in the adoptive home for at least one year. In addition, parents or other immediate family members could not have participated in previous training or research studies hosted by the research institute. Parent training was offered free of charge.

Three hundred four eligible participants responded to the recruitment notice. Participants were randomly assigned to either an online treatment group ($n = 151$) or a control group ($n = 153$). Participants in the control group were offered online training after the conclusion of the study. Reported here are results for the 128 participants in the treatment group and 128 participants in a matched sample control group who had complete data through the final round of data collection (attrition rate = 15% for treatment group, 16% for control group). Control group participants were matched to treatment group on child sex, age, adoption type (domestic vs. international), and age at

adoption (within 9 months). Means and standard deviations for continuous descriptive variables by group (control vs. treatment) for the child can be found in Table 1. Further, frequencies and percentages for categorical descriptive variables by group for the child can be found in Table 2. Means and standard deviations for continuous descriptive variables by group for the primary caregiver can be found in Table 3. Further, frequencies and percentage for categorical descriptive variables by group for the primary caregiver can be found in Table 4. As can be seen in Tables 1–4, the treatment and control groups did not differ significantly on any descriptive variables.

Procedure

Prior to data collection, ethical approval was obtained from the university’s Institutional Review Board. All participants provided informed consent before participating in research. All participants participated in an online pre-test approximately two weeks before intervention began and an online post-test approximately two weeks after intervention ended. Primary caregivers completed the Strengths and Difficulties Questionnaire (SDQ; Goodman, 2001) and Trauma Symptoms Checklist for Young Children (TSCYC; Briere, 2001) at both pre- and post-test. Psychometric properties of the questionnaires for both pre- and post-treatment can be found in Table 5. In addition, participants provided background information, including demographics and the child’s pre-adoption history, at pre-test. The questionnaires making up the pre- and post-test assessments were presented in random order to each participant at each administration.

Assessments

The SDQ is a 25-item measure of behavior for children age 3 to 16 years old that can be completed by parents, teachers, or adolescents. The SDQ assesses four domains of behavioral problems: Emotional Symptoms, Conduct Problems, Hyperactivity/Inattention, and Peer Problems. Added together, scores from these four subscales give a Total Difficulties score. The SDQ also assesses Prosocial Behavior. Each item is rated on a 3-point scale (0 = *not true* to 2 = *certainly true*). The SDQ has good reliability and validity (Goodman, 2001).

The TSCYC is a 90-item caregiver-report measure of acute and chronic post-traumatic symptomology in children ages 3 to 12 years old. The TSCYC yields eight clinical subscales: Anxiety, Depression, Anger/Aggression, Post-traumatic Stress-Intrusion, Post-traumatic Stress-Avoidance, Post-traumatic Stress-Arousal, Post-traumatic Stress-Total, Sexual Concerns, and Dissociation. The TSCYC also contains two validity scales: Response Level, which indicates a tendency for reporters to over-respond, and Atypical Response, which indicates a tendency to

TABLE 1
Means and Standard Deviations for Continuous Descriptive Variables by Group for the Child

	<i>M</i>	<i>SD</i>	<i>F</i>	<i>P</i>
Current age in years			.07	.79
Treatment	8.18	2.13		
Control	8.12	2.08		
Age at adoption in months			.29	.60
Treatment	43.96	32.91		
Control	41.78	31.44		
Length of time in home in months			.01	.94
Treatment	63.75	34.69		
Control	63.45	33.90		

TABLE 2
Frequencies and Percentage for Categorical Descriptive Variables by Group for the Child

	<i>Treatment</i>		<i>Control</i>		χ^2	P
	n	%	n	%		
Child sex					.00	1.00
Male	64	50.0%	64	50.0%		
Female	64	50.0%	64	50.0%		
Child ethnicity					2.92	.71
Asian	23	18.0%	21	16.4%		
Black/African American	37	28.9%	34	26.6%		
Hispanic/Latino	11	8.6%	19	14.8%		
White/Caucasian	52	40.6%	49	38.3%		
Native American	1	0.8%	2	1.6%		
Other	4	3.1%	3	2.3%		
Adoption type					.00	1.00
Domestic	52	40.6%	52	40.6%		
International	76	59.4%	76	59.4%		
Neglect					.61	.43
Yes	105	82.0%	100	78.1%		
No	23	18.0%	28	21.9%		
Physical abuse					1.04	.31
Yes	56	43.8%	48	37.5%		
No	72	56.3%	80	62.5%		
Sexual abuse					2.87	.09
Yes	32	25.0%	21	16.4%		
No	96	75.0%	107	83.6%		

under-respond. Each item is rated on a 4-point scale (from 1 = *not at all* to 4 = *very often*). The TSCYC clinical scales have good reliability (Briere et al., 2001) and good convergent validity with other parent-report measures (Wherry, Graves, & King, 2008).

Intervention Protocol

Participants in the treatment group were given online access to 18 learning modules (20–30 minutes to view each module) for 30 days. Modules included recorded videos of lecture-type

TABLE 3
Means and Standard Deviations for Continuous Descriptive Variables by Group for the Primary Caregiver

	<i>M</i>	<i>SD</i>	<i>F</i>	<i>P</i>
Parent current age			.24	.63
Treatment	43.39	7.04		
Control	42.98	6.56		
Number of children in home			2.75	.10
Treatment	3.19	1.14		
Control	2.92	1.40		

TABLE 4
Frequencies and Percentage for Categorical Descriptive Variables by Group for the Primary Caregiver

	<i>Treatment</i>		<i>Control</i>		χ^2	P
	n	%	n	%		
Parent ethnicity					5.04	.41
Asian	1	0.8%	1	0.8%		
Black/African American	1	0.8%	0	0.0%		
Hispanic/Latino	1	0.8%	1	0.8%		
White/Caucasian	122	95.3%	125	97.7%		
Native American	0	0.0%	1	0.8%		
Other	3	2.3%	0	0.0%		
Marital status					2.94	.40
Single	5	3.9%	8	6.3%		
Married	116	90.6%	117	91.4%		
Divorced	7	5.5%	3	2.3%		
Parent education					2.34	.51
High school	5	3.9%	2	1.6%		
Some college	14	10.9%	14	11.0%		
College degree	73	57.0%	67	52.8%		
Advanced degree	36	28.1%	44	34.6%		
Income					7.40	.29
\$25,000–\$34,999	1	0.8%	0	0.0%		
\$35,000–49,999	3	2.4%	1	0.8%		
\$50,000–\$74,999	9	7.1%	9	7.0%		
\$75,000–\$99,999	32	25.4%	22	17.2%		
\$100,000–\$150,000	19	15.1%	31	24.2%		
\$150,000 +	31	24.6%	37	28.9%		
TBRI exposure					.14	.70
Yes	67	52.3%	70	54.7%		
No	61	47.7%	58	45.3%		

TABLE 5
Psychometric Properties of the Questionnaires Pre- and Post-Treatment

<i>SDQ</i>	α Pre-treatment	α Post-treatment
Emotional problems	.69	.65
Conduct problems	.61	.67
Hyperactivity	.72	.73
Peer problems	.61	.69
Prosocial behavior	.69	.71
Total problems	.66	.69
TSCYC		
Anxiety	.86	.87
Depression	.85	.84
Anger/Aggression	.92	.91
Posttraumatic Stress—Intrusion	.87	.89
Posttraumatic Stress—Avoidance	.76	.77
Posttraumatic Stress—Arousal	.83	.83
Posttraumatic Stress—Total	.83	.86
Dissociation	.92	.90
Sexual concerns	.81	.81

instruction with main ideas written on a whiteboard for viewers. Short video clips were embedded in several places throughout each module. The video clips showed authentic examples of TBRI practices in use with children in various contexts. For example, a video clip may show an adult interacting with a child in a manner that demonstrates a specific TBRI practice. All modules were available 24 hours a day, seven days a week. Modules were designed to teach strategies and skills intended to improve behavioral outcomes for children with histories of maltreatment. The training consisted of five to six modules dedicated to each of the TBRI principles: Empowering, Connecting, and Correcting Principles. The training utilized standardized modules routinely used in TBRI parent trainings with various audiences interested in creating changes for children with early adverse histories, including audiences of child welfare professionals, teachers, and adoptive and foster parents. Only treatment group participants completing 75% or more of the online modules were included in the current study.

RESULTS

The outcomes of the parent training intervention on the SDQ and TSCYC subscales were examined by repeated measures Multivariate Analysis of Covariance (MANCOVAs) with time (pre and post) as the within subjects factor, group (treatment and control) as the between subjects factor, and child’s sex and current age as the covariates. Tables 6 and 7 present the descriptive statistics and the MANCOVA results for the SDQ and TSCYC subscales respectively. Tables include *F*-values for simple and interaction effects as well as related effect sizes (η_p^2).

Data revealed several significant main effects for the covariates (child’s current age and sex) on the SDQ subscales. Results showed a main effect for child’s current age on the Conduct Problems subscale ($F = 5.26, p < .05, \eta_p^2 = .02$) such that parents reported that older children had more

TABLE 6
Results for the Strengths and Difficulties Questionnaire by Group: Descriptives (Means and Standard Deviations) and Generalized Linear Model Results (*F*-Values Partial η^2)

	<i>Treatment</i>		<i>Control</i>		<i>Time</i> (η_p^2)	<i>Group</i> (η_p^2)	<i>Interaction</i> (η_p^2)
	M	SD	M	SD			
Emotional problems					.56 (.00)	.01 (.00)	4.54 (.02)*
Pre	3.86	2.32	3.61	2.52			
Post	3.53	2.56	3.70	2.36			
Conduct problems					.02 (.00)	1.44 (.01)	3.82 (.02)*
Pre	4.64	2.57	4.08	2.42			
Post	4.09	2.53	3.92	2.46			
Hyperactivity/Inattention					5.38 (.02)*	1.71 (.01)	13.41 (.05)**
Pre	5.91	1.83	5.90	1.90			
Post	5.31	1.63	5.88	1.81			
Peer problems					.35 (.00)	.25 (.00)	.53 (.00)
Pre	3.18	2.19	2.98	2.18			
Post	3.08	2.19	3.00	2.07			
Prosocial behavior					.89 (.00)	.74 (.00)	.08 (.00)
Pre	5.29	2.45	5.57	2.40			
Post	5.51	2.47	5.73	2.44			
Total difficulties					1.01 (.00)	.11 (.00)	11.69 (.04)**
Pre	17.59	6.18	16.56	6.56			
Post	16.50	6.23	16.09	6.04			

Note. * $p < .05$, ** $p < .01$.

TABLE 7
Results for the Trauma Symptoms Checklist by Group: Descriptives (Means and Standard Deviations) and Generalized Linear Model Results (*F*-Values Partial η^2)

	<i>Treatment</i>		<i>Control</i>		<i>Time</i> (η_p^2)	<i>Group</i> (η_p^2)	<i>Interaction</i> (η_p^2)
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
Anxiety					.16 (.00)	.10 (.00)	.27 (.00)
Pre	60.36	16.11	60.65	16.25			
Post	58.83	14.69	59.77	14.72			
Depression					.75 (.00)	1.06 (.00)	.33 (.00)
Pre	60.41	13.76	58.45	13.74			
Post	58.60	12.86	57.35	13.31			
Anger/Aggression					.46 (.00)	.28 (.00)	4.46 (.02)*
Pre	65.44	17.42	63.56	18.34			
Post	62.08	16.51	62.83	17.54			
PTS intrusion					.09 (.00)	.16 (.00)	4.08 (.02)*
Pre	56.10	14.50	54.18	12.10			
Post	54.00	13.22	54.77	12.65			
PTS avoidance					.05 (.00)	.73 (.00)	4.08 (.02)*
Pre	60.89	16.41	58.02	13.73			
Post	59.12	16.06	59.07	14.68			
PTS arousal					.10 (.00)	.17 (.00)	3.79 (.02)*
Pre	67.70	16.39	67.66	18.20			
Post	63.95	16.11	66.68	17.98			
PTS total					.21 (.00)	.00 (.00)	3.77 (.02)*
Pre	64.21	16.00	62.99	15.11			
Post	61.77	15.06	62.91	15.41			
Dissociation					.22 (.00)	.01 (.00)	4.56 (.02)*
Pre	61.66	15.86	60.41	16.96			
Post	57.83	15.11	59.51	15.72			
Sexual concerns					.00 (.00)	2.11 (.01)	.95 (.00)
Pre	54.30	14.42	51.57	12.30			
Post	52.76	12.32	51.08	12.00			

Note. PTS = Post-traumatic Stress.
**p* < .05.

conduct problems than younger children at both pre-test ($r = .13, p < .05$) and post-test ($r = .13, p < .05$). Age differences in parental reports of conduct problems are a common finding in the developmental literature (Brestan & Eyberg, 1998). Further, results revealed a significant main effect for child’s sex on the Hyperactivity/Inattention subscale ($F = 11.77, p < .001, \eta_p^2 = .05$), Peer Problems ($F = 10.71, p < .001, \eta_p^2 = .04$), and Prosocial Behavior ($F = 5.09, p < .05, \eta_p^2 = .02$). Parents reported more hyperactive/inattentive behavior ($M_{\text{male}} = 6.11, SD = 1.65; M_{\text{female}} = 5.39, SD = 1.87$) and peer problems ($M_{\text{male}} = 3.17, SD = 2.03; M_{\text{female}} = 2.94, SD = 2.28$) in male children than female children. Moreover, parents reported more prosocial behavior in females than males ($M_{\text{male}} = 5.23, SD = 2.34; M_{\text{female}} = 5.82, SD = 2.49$). No other main effects were found on the SDQ scales for the child’s sex, current age, time, and group.

As can be seen in Table 6, results revealed significant interaction effects for time and group for three of the five SDQ subscales and Total Difficulties. Caregiver reports of the child’s Emotional Problems, Conduct Problems, and Total Difficulties were significantly lower at post-test than at pre-test for the treatment group, but did not significantly change over time for the control group. Results also revealed a significant main effect for time ($F = 5.38, p < .05, \eta_p^2 = .02$) as well as a time by

group interaction for the SDQ Hyperactivity/Inattention subscale. On average, parents reported more hyperactivity and inattention at pre-test than post-test ($M_{pre} = 5.91$, $SD = 1.87$; $M_{post} = 5.60$, $SD = 1.72$). Though both groups changed from pre-test to post-test, the treatment group had a significantly larger decrease in Hyperactivity/Inattention scores at post-test ($M_{pre} = 5.91$, $SD = 1.83$; $M_{post} = 5.31$, $SD = 1.63$) than the control group ($M_{pre} = 5.90$, $SD = 1.90$; $M_{post} = 5.88$, $SD = 1.81$). No other interaction effects were found on the SDQ scales between the child's sex, current age, time, and group.

Results revealed several significant main effects for the covariates (child's current age and sex) for T scores on the TSCYC subscales. Data showed a main effect for child's current age on the Sexual Concern subscale ($F = 5.73$, $p < .05$, $\eta_p^2 = .02$) such that parents had more sexual concerns with older children than younger children at both pre-test ($r = .14$, $p < .05$) and post-test ($r = .16$, $p < .01$). Further, results showed a significant main effect for child's sex on the Anxiety ($F = 12.24$, $p < .001$, $\eta_p^2 = .05$), Depression ($F = 11.03$, $p < .001$, $\eta_p^2 = .04$), and Anger/Aggression ($F = 13.90$, $p < .001$, $\eta_p^2 = .05$) subscales. Parents reported more anxiety ($M_{male} = 56.94$, $SD = 13.05$; $M_{female} = 62.86$, $SD = 16.95$) and depression ($M_{male} = 56.10$, $SD = 10.75$; $M_{female} = 61.31$, $SD = 15.23$) in female children than male children. Moreover, parents reported more anger and aggressive behavior in males than females ($M_{male} = 67.50$, $SD = 20.46$; $M_{female} = 59.96$, $SD = 12.71$). No other main effects were found on the TSCYC scales for the child's sex, current age, time, and group.

As can be seen in Table 7, results revealed significant interaction effects for time and group for T scores on six of the nine TSCYC scales. Caregiver reports of the child's Anger/Aggression, Post-Traumatic Stress—Intrusion, Post-Traumatic Stress—Avoidance, Post-Traumatic Stress—Arousal, Post-Traumatic Stress—Total, and Dissociation significantly decreased from pre-test to post-test for the treatment group, but did not change significantly for the control group. Further, a significant group by time by child's sex interaction emerged for the Anger/Aggression subscale ($F = 4.60$, $p < .05$, $\eta_p^2 = .02$). Males in the treatment group had a significantly larger decrease in Anger/Aggression scores from pre- to post-test ($M_{pre} = 70.82$, $SD = 20.29$; $M_{post} = 66.13$, $SD = 17.56$) than females in the treatment group ($M_{pre} = 60.05$, $SD = 11.88$; $M_{post} = 60.03$, $SD = 14.89$). Data also revealed significant interactions for time by child's sex on the Anxiety subscale ($F = 7.50$, $p < .01$, $\eta_p^2 = .03$). Females had a significantly larger decrease in Anxiety scores from pre- to post-test ($M_{pre} = 64.34$, $SD = 18.09$; $M_{post} = 61.39$, $SD = 15.81$) than males ($M_{pre} = 56.67$, $SD = 12.91$; $M_{post} = 57.21$, $SD = 13.18$) in both groups. No other interaction effects were found on the TSCYC scales between the child's sex, current age, time, and group.

DISCUSSION

The authors of the current study investigated whether the training of adoptive parents in a trauma-informed intervention (in an online format) aided in reducing behavioral problems and trauma symptoms in their adopted children. Regarding behavior, parents in the treatment group reported significantly lower scores two weeks after TBRI training for Emotional Problems, Conduct Problems, and Total Difficulties on the SDQ, while behaviors in the control group remained unchanged. Regarding trauma symptoms, parents in the treatment group reported that their children had significantly lower Anger/Aggression, Post-Traumatic Stress—Intrusion, Post-Traumatic Stress—Avoidance, Post-Traumatic Stress—Arousal, Post-Traumatic Stress—Total, and Dissociation on the TSCYC after intervention, while trauma symptoms in the control group remained unchanged. These results suggest that training parents to implement a trauma-informed intervention, specifically TBRI, with their children can produce significant reduction in behavioral problems and trauma symptoms. Moreover, the fact that parents received this training by viewing online modules is also noteworthy. Given the large population of adoptive parents across the United

States and elsewhere, the prospect of providing “in-person” seminars and training sessions would be prohibitive in attempting to get this information to every adoptive parent who desired to gain this knowledge. Using online modules for training can help both parents and trainers overcome prohibitive obstacles to content delivery such as limited seating at brick-and-mortar venues, as well as travel, expense, and time considerations to attend training events.

Thus, children seem to experience benefits when their parents are provided with knowledge about complex trauma and its effects on children and youth, how to recognize behaviors that result from trauma, and trauma-informed intervention strategies embedded within the context of TBRI. These findings are encouraging for adoptive parents who are struggling with a variety of developmental and behavioral issues on a daily basis and lack the knowledge and skills to address these issues effectively. In addition to improved behavior, when parents are given appropriate tools to help their children they may also experience less frustration within themselves, improved quality of family life, and ultimately less likelihood that the child’s behaviors will lead to a disrupted adoption (Dozier et al., 2002).

Results also revealed several significant main effects for child’s sex on the SDQ Hyperactivity/Inattentive and Prosocial subscales and well as the TSCYC Anxiety, Depression, and Anger/Aggression subscales. These differences may be more indicative of bias in the behaviors that scale items are capturing rather than actual differences in overall behavior (Biederman et al., 2002). For example, previous research on gender differences in childhood has found that boys and girls engage in different forms of aggression (Crick & Grotpeter, 1995) and prosocial behavior (Eagly, 2009) rather than being more or less likely of exhibiting these behaviors overall. Thus, it is possible that the scales are capturing specific forms of behavior that are more prominent in one sex (i.e., overt vs., relational aggression, communal vs. agentic prosocial behavior).

Limitations

Although promising, there are limitations to the sample used in this study. Participants consisted of volunteers who were interested in learning strategies to improve outcomes in their adopted children. This may not represent the general population of adoptive parents. In addition, because the child behavior measures were based on a parent-report model, it is possible that parents in the treatment group reported fewer behavioral problems due to an increase in self-efficacy or confidence in their parenting skills due to receiving the training. However, other studies using the same intervention principles have reported post-intervention improvements in child outcomes even when measurements are based on criteria other than parental reports. Such changes include improvements in neurochemistry profiles (Cross et al., 2011), attachment behavior (Purvis, McKenzie et al. 2013), and social/emotional skills (Purvis et al., 2011). In addition, other studies have found high validity between parent reports of behavior and other behavioral measures, including teacher report (Kriebel & Wentzel, 2011; Miller, Chan, Tirella & Perrin, 2009) and self-report (Gagnon-Oosterwaal et al., 2012). As is common in studies of adopted children with early adverse histories, especially post-institutionalized children, there was little documentation about their pre-adoption experiences.

Additionally, the current study reports on short-term improvements in behavior and trauma symptoms. Although encouraging, future research should assess long-term follow-up of outcomes following the intervention to examine whether behavioral improvements continue over an extended period of time.

CONCLUSION

Through this study the authors provide evidence that web-based training, which aims to provide important content but allows participants to progress through training at their own speed on their

own timeframe, is a valuable training model. Children who have experienced complex trauma can bear the scars of their trauma long after removal from harsh environments. Even after adoption into loving homes, their developmental, sensory, and/or behavioral issues may continue to create ongoing challenges for families and may worsen over time without intervention. These issues can leave parents frustrated, stressed, and overwhelmed when typical parenting practices do not resolve these issues. To effectively overcome these challenges, parents should be informed about complex trauma and its impact on children and youth, and learn specific strategies that target this underlying cause of behavior or other external symptomology. Results of this study suggest that web-based trauma-informed TBRI training can improve child outcomes and give families hope.

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