Abstract

The Circle of Security-Parent DVD program (COS-P) is a widely used parenting intervention that is gaining popularity globally as it is currently being delivered across several continents. Despite the uptake of COS-P, there is limited research on its effectiveness for specific groups. Here we present a multi-site evaluation of a group delivery of the eight-week COS-P program to foster carers (n = 54) of 6-12 year-old children in an urban community as facilitated by community-based providers from a specialist child and youth mental health services (n = 2). Three measures, the Parent Stress Index, the Parent Child Relationship Inventory, and the Strengths and Difficulties Questionnaire, were used to assess functioning via a pre-post treatment design. Foster carers who participated in COS-P reported reductions in levels of emotional and behavioural difficulties for the children in their care. They also reported reductions in parent-child dysfunctional interactions and parental distress. Finally, program completion appeared to be associated with a reduction in foster carers' perceptions of their foster child as being difficult to take care of, and with lower levels of overall stress related to their role as a foster carer. These findings, and their implications for service delivery and future research, are discussed.

Effects of the 'Circle of Security' Group Parenting Program (COS-P) With Foster Carers: An Observational Study

Foster carers are responsible for providing daily care to children in child welfare care and are required to support children with complex medical and mental health problems. A substantial number of children in foster care have been found to have behavioural and emotional difficulties, including attachment difficulties (a core feature of many in child welfare care), anxiety, depression, post-traumatic stress, conduct problems (including defiance, anger and aggression), sexual reactive problems, inattention/hyperactivity, and suicidal behaviour (Briere et al., 2001; Osborn, Delfabbro & Barber, 2008; Oswald, Heil, & Goldbeck, 2010; Sawyer et al, 2007; Tilbury, Osmond, Wilson, & Clark, 2007). Considering the elevated caregiving burden represented by these conditions and the attendant parenting stress, it is not surprising some foster caregivers find it difficult to provide an adequate caregiving environment. As a result, foster carers have been identified as a group with an unmet need for training in specialized parenting skills (Murray et al., 2011). Despite this need, little research evidence exists that training received by foster carers promotes these competencies.

In the field of early intervention generally, and especially for professionals working with maltreated, foster, and adopted children, there is a rapidly increasing demand for interventions that are effective in shifting problematic or at-risk attachment styles and relational patterns of these children toward more adaptive developmental pathways. The number of systematic intervention programs that are at least partially driven by attachment theory and research has been increasing (see Lieberman & Zeanah, 1999; van IJzendoorn, Juffer, & Duyvesteyn, 1995; Steele & Steele, 2017).

Research on programs to support foster carers and their children has returned mixed results. For example, a recent randomized controlled trial on the Multidimensional Treatment Foster Care for Preschoolers (MTFC-P) program found no evidence of the relative efficacy of the program over treatment as usual among foster carers in the Netherlands (Jonkman et. al., 2017). While some studies have found the MTFC-P program to reduce levels of caregiver stress and improve permanency outcomes in the US (Fisher, Kim & Pears, 2009), Jonkman et al. (2017) concluded that children in usual foster care improved similarly to those in the program. Goemans and colleagues (2018) found that, although child internalizing and externalizing behaviors predicted parental stress, parental stress was not a predictor of child internalizing and externalizing behaviors.

The Circle of Security program (COS) is a parenting program developed specifically for children at risk of disrupted attachments and their caregivers (Powell et al., 2013). The program is designed to promote attachment security in early parent/child relationships through supporting and strengthening the caregiver's skills in observing and understanding the children's needs; observational and inferential skills; reflective functioning; emotion regulation, and empathy for the distress that the caregiver's unregulated emotions cause in their children (Powell et al., 2013). The original 20-week COS protocol (Hoffman et al., 2006) involves a video-feedback procedure between participating parents and their own children to help parents learn about their children's cues regarding attachment and exploration-related needs and encourage them to reflect on their caregiving practices. In two studies, the COS 20-week protocol was associated with significant decreases in attachment insecurity and disorganization, as compared to attachment assessed prior to COS (Hoffman et al., 2006; Huber et al., 2015). Further, in an RCT, a four-session home-visiting version of the COS video-feedback protocol found interaction effects among

intervention, infant temperament, and maternal attachment style; a key finding was that the COS intervention was efficacious in reducing insecure attachment for infant–mother dyads with highly irritable infants when compared to the control group (Cassidy et al., 2011).

To address resource-related barriers to broad implementation of the initial protocol design, three of the original COS developers (Cooper et al., 2011) created the Circle of Security – Parenting (COS-P) program, an abbreviated eight-week group program for parents. COS-P was designed to be applicable to a wide age range of children that could be taught relatively quickly (i.e., during a 4-day training session) to interveners with the skills typically available in community agencies, without need for extensive post-training supervision. In addition, COS-P was designed so that it could be used with a group of parents (a particularly cost-effective option), as well as with individual parents (Powell et al., 2013). The manualized COS-P structure consists of eight modules, a brief structure that contributes to greater implementability (see Bakermans-Kranenberg et al., 2003, for meta-analytic findings that relatively shorter attachment interventions are more efficacious). Finally, the intervention framework is user-friendly and face valid, making core components easy for both interveners and parents to understand.

Despite the popularity and widespread use of COS-P, relatively few studies have evaluated the application of the group COS-P program, and even fewer have focused on the efficacy of COS-P or other attachment interventions for foster carers and children. Of those that have, findings suggest that these interventions have the potential to meaningfully improve carer-child relationships and, subsequently, foster child outcomes. Dozier et al. (2008), for instance, reported that the Attachment Bio-behavioral Catchup relational intervention helped regulate cortisol levels (indicative of stress) in foster infants and toddlers—measured following the Strange Situation—to more closely resemble those of children who had not experienced early

life adversity. Additional research supports the idea that attachment interventions may be effective in altering neurobiological stress responses with the potential to improve carer-child relationship functioning (e.g. Fisher et al., 2006).

Allen et al. (2014) found that PCIT, a 14- to 20-week, manualized intervention based on theories of attachment, social learning, and behavior, was effective at improving positive parenting, reducing parenting stress, and reducing externalizing and internalizing problems among foster children. Unlike many attachment interventions, PCIT has been found to be effective for children between 2 and 7 years of age (Allen et al.).

A meta-analysis of interventions to reduce stress in foster children notes that problem behaviour in foster children and the skills of foster parents improved by 30% across the 19 studies surveyed, despite the interventions not being specifically designed to help young children (under the age of 4) cope with stress (van Andel et al., 2014). This finding suggests that some interventions may have utility for non-targeted demographic groups—i.e. older or younger children than they were designed to be given to. In addition, the need for interventions for older foster children is made clear by research suggesting that maltreatment or trauma can be just as or more detrimental for older children than for younger children; results from Shoemaker and Benuto (2017) indicate that children who were older than five when they experienced maltreatment or traumatic disruptions had more substantial attachment problems than children who experienced traumatic events before the age of five.

Additional studies evaluate the COS-P intervention for biological parents. Horton and Murray (2015) evaluated an intervention in which a nine-session COS-P program was delivered to 15 substance-abusing mothers, all of whom were pregnant or postpartum and had a least one child under the age of 12 in their care. Researchers found that the program resulted in

improvements in disciplinary practices, with a reduction in harsh discipline and permissiveness, following the program. The study also found improvements in the emotion regulation of the mothers participating in the program (Horton & Murray, 2015). Cassidy and colleagues (2017) designed a randomized controlled trial of COS-P with 220 mothers of irritable infants from families currently experiencing economic stress. Participants were recruited from 14 hospitals. Prior to the study mother-child dyads were visited in their home twice in the first month after birth. Mothers completed a demographic questionnaire and were asked to complete an adult attachment self-report measure. At 12 months mother-child dyads were invited into a laboratory setting, where they participated in the Strange Situation. During this period from one month to 12 months, dyads either received three intervention or three control home visits, with intervention dyads receiving an additional fourth brief home visit. This study found that COS-P did significantly decrease the probability of insecure attachment with the majority of at-risk mother-infant participants. Finally, a single case study (Andrews, 2019) reported on a COS-Intensive protocol that had been adapted into an individual format for an 8-year-old in order to address externalising problems. Although the COS protocol was originally intended for use with parent-child dyads up to preschool age (0 to 5 years), Andrews describes a successful expansion of the program to dyads in middle childhood, with the parent improving her sensitivity to and ability to manage her daughter's externalising behaviours as a result of the intervention.

The major aim of the current observational study was to evaluate outcomes associated with the program in a sample of foster carer who are providing care to children with disrupted attachment resulting from abuse and neglect. Major outcome variables were the carer-child relationship functioning, emotional wellbeing of the child and carer stress. Specifically, we hypothesized that after participation in the COS-P intervention, foster carers would show: (i)

improved functioning and satisfaction with their relationship to their foster child, (ii) decreased behavioral, emotional and social difficulties for their foster child and (iii) decreased levels of stress for the carers.

Method

Participants

Participants (N = 54) were recruited through flyers disseminated by foster care support agencies and directly to foster carers via emails from Child Safety Officers in Brisbane, Queensland. Participants were approached to participate in the study by Evolve Therapeutic Service clinicians who were providing services to the children in the participant's' care. All program participants were approved foster carers who had at least one child in their care at the time of the study. Foster carers of children aged six to 12 were eligible to participate (additional eligibility criteria included seeking services at one of two Evolve Therapeutic Service locations where participants were recruited, see next paragraph). No kinship carers were included in the study. Participation in the program was entirely voluntary and participants could withdraw at any stage. All COS training participants were asked to complete pre- and post-test measures. Ethics and governance approval was obtained with Mater Research as part of the Mater Children's Hospital, and in 2014 transferred and approved by Children's Health Queensland, Queensland Health (Reference number: HREC/13/MHS/118).

Participating service and sites

The COS-P intervention was administered at two Evolve Therapeutic Service (ETS) locations, situated within Queensland Health Child and Youth Mental Health Services (CYMHS), Brisbane, Australia. The focus of ETS is to provide planned and coordinated

therapeutic and behaviour supports to children and young people in child welfare and out-of-home care with the goal of improving their emotional wellbeing and the development of skills to enhance participation in school and the community. Eligibility criteria for ETS include: the child is under 18 years of age, presents with severe and/or complex psychological and/or behavioural problems (i.e. a chronic trauma history, extreme behavioural problems across multiple settings, at risk of harming self/others and multiple placement breakdowns), and is under child welfare and on interim or finalised child protection orders.

Providers

Between the two sites, a total of four providers delivered the COS-P program to groups. The four providers were tertiary qualified and registered allied health workers (e.g. Psychology, Social Work) who were trained as COS-P program facilitators. The providers engaged in regular supervision and support with a senior allied health clinician within the service, who was trained in the 20-day and the COS-P protocols. The program was disseminated over a period of four years, from 2013 to 2018.

Measures

Demographic Information

A demographic questionnaire was administered to all participants. The following information was gathered: Age of the carer, gender of the carer, number of years of education, employment status, partner employment status (if applicable), relationship length (if applicable), cohabitation status, and relationship status. Years of education reflected either specific years reported or was converted to years by treating “Post-graduate” as 18 years, “Four-year degree” as 16 years, “Diploma” or “Certificate” without years specified as 14 years, and “Some college”

as 13 years. The carers were then asked to complete three measures relating to their relationship with the foster child.

Parent-Child Relationship Inventory

The quality of the foster carer-child relationship was examined using the Parent-Child Relationship Inventory (PCRI; Gerard, 1994). The questionnaire is comprised of 78 questions, to which respondents are asked to indicate the extent to which they agree with a given statement about parenting, the parent-child relationship, or their child on a 4- point Likert scale ranging from 1 (Strongly agree) to 4 (Strongly disagree). The statements relate to the subscale of interest: 1) Parental support; 2) Satisfaction with parenting (e.g. "I get as much satisfaction from having children as other parents do"); 3) Involvement (e.g. "I spend a great deal of time with my child"); 4) Communication (("My child generally tells me when something is bothering him or her"); 5) Limit setting (e.g. ("I have trouble disciplining my child"); and 6) Autonomy (e.g. ("Parents should protect their children from tings that might make them unhappy"). These scales yield a general impression of the quality of the parent-child relationship while simultaneously providing a quantified depiction of each of the relationship's characteristics. Examples of items include "I get as much satisfaction from having children as other parents. Lower scores on each subscale indicated possible problems in that area of the parent-child relationship. For the full scale, scores under 40 indicate a likely problematic relationship, while scores under 30 are indicative of a serious problem. Coffman et al. (2006) reported Cronbach alpha coefficients for the five scales above mentioned (i.e., parent child relationship scales) ranging from.47 to .82 for mothers (N = 80) and from .54 to .88 for fathers (N = 66). They also reported significant stability results for these scales in the form of correlations between repeated measures (one-year gap), ranging from .64 to .82 for mothers and from .58 to .76 for fathers.

Parenting Stress Index – IV – Short Form

The short form of the Parenting Stress Index (PSI-4) was used to measure parental stress in this study. The PSI-4 was developed by Abidin (2012) to measure stress in parenting while identifying dysfunctional parenting and adjustment problems in children. The short form (PSI-4-SF) consists of 36 statements that are rated on a 5-point Likert scale from Strongly Agree to Strongly Disagree. The statements correspond to three sub-scales: Parental Distress (PD) (e.g. 'e.g. 'I feel trapped by my responsibilities as a parent'), Parent-Child Dysfunctional Interaction (P-CDI) (e.g. ''my child rarely does things for me that make me feel good'), and Difficult Child (DC) (e.g. '''my child makes more demands on me than most children''), which combine to form a Total Stress scale. The Parental Distress subscale measures the amount of stress experienced in the parenting role and measures competence, social support, depression, spousal conflicts, and restrictions felt by the parent. The Parent-Child Dysfunction subscale measures how the parent feels the child meets his or her expectations and how satisfied he or she is with parent-child interactions. The Difficult Child subscale measures how difficult the parent perceives their child to be. The Total Stress score indicates the overall level of parenting stress. Total Stress scores in the 91st percentile or higher are considered clinically significant (Abidin, 2012). Only the Total Stress score was used for this study. The PSI-4-SF was normed on over 1,000 parents using the same data as the full-length PSI-4. Internal consistency as measured by Cronbach's alpha was found to be good. The Total Stress scale has $\alpha = 0.95$ and all subscales have $\alpha = 0.88$ to 0.90. Test-retest reliability for the Total Stress scale was $r = 0.84$ and for the subscales ranged from $r = 0.68$ to $r = 0.85$ over a 6-month time period. Since test items are taken directly from the PSI-4, validity is considered to be shared with correlations between the Total Stress scale of the PSI-4 and the PSI-4 SF being $r = 0.98$ (Abidin, 2012).

The Strengths and Difficulties Questionnaire (SDQ)

The SDQ consists of 25 items describing positive and negative attributes of children and adolescents. Each item has to be scored on a 3-point scale with 0='not true', 1='somewhat true', and 2='certainly true'. There are 5 subscales of 5 items each: the emotional symptoms subscale (e.g. "Many worries or often seems worried"), the conduct problems subscale (e.g. "Often loses temper"), the hyperactivity-inattention subscale (e.g. "Restless, overactive, cannot stay still for long"), the peer problems subscale (e.g. "Would rather be alone than with other children"), and the prosocial behaviour subscale (e.g. "Considerate of other people's feelings"). Subscale scores can be computed by summing scores on relevant items (after recoding reversed items; range 0–10). Higher scores on the prosocial behaviour subscale reflect strengths, whereas higher scores on the other four subscales reflect difficulties. A Total Difficulties score can also be calculated by summing the scores on the emotional symptoms, conduct problems, hyperactivity-inattention, and peer problems subscales (range 0–40). Higher scores indicate greater difficulties experienced, with scores equal to or greater than the 90th percentile score considered "High Total Difficulties", which shows some correspondence with DSM-IV clinical diagnoses (He et al., 2013). Two versions of the SDQ were used – one parent report measure was used for children aged 4-10 years and another parent report measure was used for children aged 11-17 years. Reviews of the internal consistency of the SDQ has its Cronbach's alpha as falling above the acceptable threshold of 0.70, with small studies reporting it to be ≥ 0.85 (Kersten, Czube, McPherson et al. 2016). Research has reported adequate test-retest reliability of the SDQ-Parent version for the Total Difficulties score (ICC = .85) (Goodman, Ford, Simmons et al., 2000).

Program

The Circle of Security Parent DVD (COS-P) program: COS-P is an eight-week education-focused manualized program with audio-visual and printed materials to promote discussion and understanding of how to promote secure attachment and prevent at-risk infants from developing insecure attachments (Cooper et. al., 2009; Yaholkoski et al., 2016). The COS-Parenting (COS-P) program offers a modified, shortened version of the original 20-week COS intervention intended to facilitate caregivers' understanding of concepts related to attachment (Cooper et al., 2009). It has been widely adapted to be delivered in eight sessions. COS-P uses engaging and accessible graphic representations to illustrate separate components of the attachment system (Ainsworth, 1979), including the child's need for exploration and need for comfort and protection from the caregiver. Through pre-recorded videos and facilitated discussions, caregivers increase their capacity to observe and read children's behavior to identify the attachment-related need being expressed, reflect upon their own reactions and feelings in response to difficult child behaviors, and provide a sensitive caregiving response (Marvin et al., 2002). The COS-P program was chosen in hopes it would prove effective even in the special case of foster carers, who are in the position of dealing with behavioural issues and relationship dynamics inherited from children's relationships with biological parents, and whose difficulties may have been compounded in the interim by relationship instability, residential instability, and other factors.

Procedure

Once foster carers agreed to participate in the study they were provided with an information sheets and consent forms, as well as with the pre-test measures before the commencement of their participation in the COS program. The pre-test measures included the

Strengths and Difficulties Questionnaire (SDQ), Parenting Stress Index Short form (PSI-4-SF), and the Parent Child Relationship Inventory (PCRI). The questionnaires were administered in the first COS-P training session by the group facilitators, who explained the rationale for the research as well as instructions for completing the questionnaires. The questionnaires took participants between 40 and 60 minutes to complete. Participants then participated in two-hour sessions of the COS training program once per week for eight weeks. After completion of the COS program, participants completed the post-test measures of the SDQ, PSI-4-SF, and PCRI. Group facilitators administered the post-test questionnaires during the eighth and final session of the program and participants were given the option of completing the measures during the session or taking them home to complete. If they took the questionnaires home, they were asked to return them in person, scan and email them to the researchers, or mail them back to the service once complete.

Data Cleaning

Data were cleaned as follows: Cases (reporting adult) wherein more than 50% of a subscore were blank (not recorded) were excluded from further analysis. This resulted in three cases being dropped from the analysis. For remaining cases (N = 51), individual blank answers were imputed as the mean value of extant answers within that sub-score except for the PCRI. For PCRI, only complete questionnaires were analyzed. PCRI scores were converted to T scale scores.

Results

Participant summary

54 foster carers participated in this study. Basic demographic characteristics are reproduced in Table 1. The majority of participants were female (74.1%). Participants ranged in

age from 23 to 64, with an average of 47 years of age and 12.9 years of education. The majority reported being unemployed (44.4%), with only one participant self-reporting as a full-time carer. Twenty-six of 54 participants reported having a romantic partner, with an average relationship length of 9.2 years. Nine participants were missing data on baseline measures, and three participants were excluded from base analysis of scales due to missing values.

Table 2 includes the demographic characteristics of the children identified as being in the care of the participating foster carers. The majority of foster children were male (68.5%) and averaged 8.2 years of age. We performed an attrition analysis and found no differences between participants with complete data versus those with incomplete or missing data on any baseline demographic variables (gender, age, years of education, employment, partner employment, relationship length, cohabitation with partner, relationship status).

Table 1. Participant Characteristics

Characteristic	**Value**	**Count**	**Percent**
Total		54	100%
	Male	5	9.3%
	Female	40	74.1%
	Not available	9	16.7%
Age	Range	23-64	
	Mean (SD)	47.0 (11.4)	
Years of Education	Range	2-18[a]	
	Mean (SD)	12.9 (2.8)	
Employment	Full Time	12	22.2%
	Full Time Carer	1	1.9%
	Part Time	7	13.0%
	Part Time, Full Time Study	1	1.9%
	Unemployed	24	44.4%
	Not available	9	16.7%
Partner Employment	Full Time	19	35.2%
	Part Time	3	5.6%
	Unemployed	7	13.0%

	Unemployed, Full Time Study	1	1.9%
	No partner/Not Available	24	44.4%
Relationship Length	Range	0-45[b]	
	Mean (SD)	9.2 (11.2)	
Living with Romantic Partner	Yes	21	38.9%
	No	5	9.3%
	No partner	17	31.5%
	Not available	11	20.4%
Involvement with Partner	Married	25	46.3%
	Engaged	1	1.9%
	Steady Relationship	4	7.4%
	Separated	3	5.6%
	Divorced	3	5.6%
	Single	9	16.7%
	Not available	9	16.7%
Questionnaires Completed – Pre- and Post-Intervention	Parent Child Relationship Inventory (PCRI)	15	27.7%
	Parenting Stress Index (PSI)	32	59.2%
	Strengths and Difficulties Questionnaire (SDQ)	30	55.5%

[a]Higher levels of education ("Diploma", "Degree", etc). were assigned numeric values as described in the main text.
[b]Subjects whose relationship status was "Single" were assigned a "relationship length" of 0 for analysis purposes.

Table 2. Characteristics of children in the care of the participants

Characteristic	**Value**	**Count**	**Percent**
Total			
	Male	37	68.5%
	Female	12	22.2%
	Not available	5	9.2%
Age	Range	6-12	
	Mean	8.2	
Length of time in child welfare care	Range	3 wks – 8 yrs	
	Mean	3.4 yrs	
Length of time in the care of the foster carer	Range	3 wks – 6 yrs	
	Mean	0.4 yrs	

Data were analyzed with generalized linear mixed-level models (GLMM), grouped by subject. Initial tests were run on each full scale and subscale to compare "pre-" and "post-test" scores. This was then followed by single covariate analysis of each score vs. other subject characteristics. If a covariate was found to be rank deficient, analysis was run using only those ranks that were not deficient. "Clinical" and standardized effect sizes were calculated as follows: For scale and subscale analyses, the clinical effect size was the simple difference between the mean "pre" and "post" scores. Standardized effect size was Hedge's *g*. For covariate analyses, only the interaction term was considered (although all terms were tested by "Type III" ANOVA). If the interaction of "status" × covariate was significant, a clinical effect size and standardized effect size were calculated. The clinical effect size was the ΔΔ scale, which was of two forms: For numeric covariates, ΔΔ scale was$(post_{max} - pre_{max}) - (post_{min} - pre_{min})$, or the "post" mean for the minimum value of the covariate minus the "pre" mean for the minimum value of the covariate subtracted from the "post" mean for the maximum value of the covariate minus the "pre" mean for the maximum value of the covariate. This was divided by the range of the covariate to give a "per/x" rate. For nominal covariates, the ΔΔ clinical was $(post_a - pre_a) - (post_b - pre_b)$, or the mean post value for level "b" of a covariate minus the corresponding mean pre value, subtracted from the mean post value for level "a" of a covariate minus the corresponding mean pre value. When a covariate had more than two levels, multiple pairwise ΔΔ clinicals were calculated. Standardized effect sizes were the simple difference of standardized slopes (β coefficient of individual effect slopes) for each level of a covariate vs. pre/post status for non-quantitative covariates or difference of β slopes pre/covariate vs. post/covariate for quantitative covariates. These Δβ differences would be analogous to differences of Cohen's *d*, units are in standard deviations. Key results are outlined below.

Program had no effect on the Parent Child Relationship Index (PCRI) scores. Mean sub-scale scores for 'Satisfaction with Parenting' (SUP) and 'Involvement' (INV) were found to be within the clinical range at both pre- and post-intervention periods. Associations were very small and non-significant for all PCRI sub-scale scores (Fig. 1). In the internal consistency analysis of PCRI, the values of Cronbach's alpha of the subscales ranged between 0.62 and 0.79. The subscales "Satisfaction with parenting" (α = 0.76), "Involvement" (α = 0.74), "Communication" (α = 0.80), and "Limit Setting" (α = 0.75) presented acceptable alpha coefficients, since they are between 0.70 and 0.80. "Parental support", "Autonomy," and "Role orientation" revealed weak Cronbach's Alphas (0.66, 0.64, and 0.68, respectively), since they are all below 0.70 (Field, 2013).

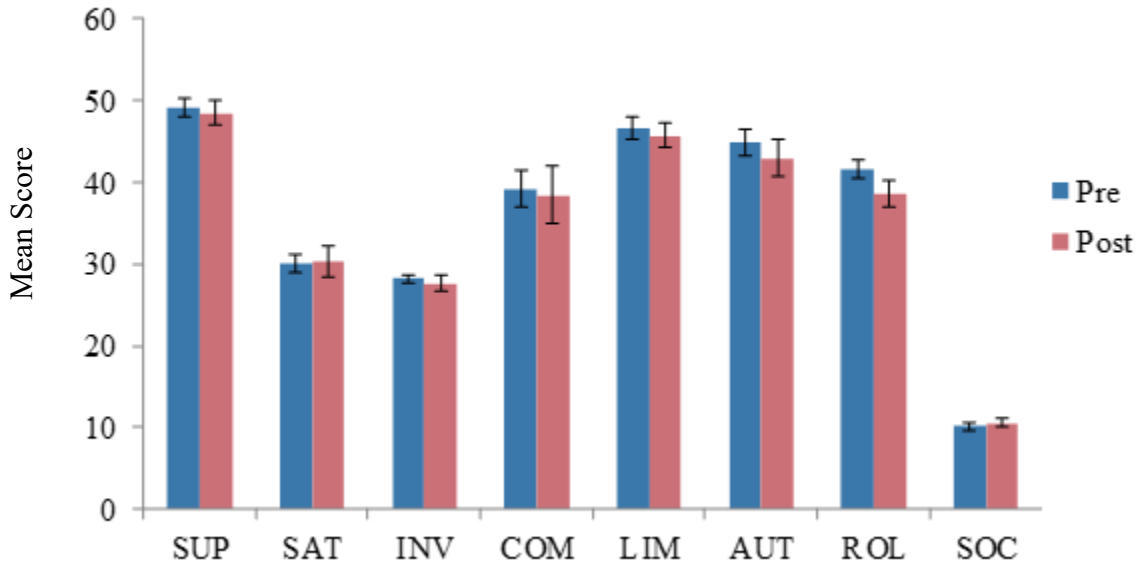

Figure 1. Mean scores of the subscales of the Parent-Child Relationship Inventory (PCRI) pre- and post-intervention. The abbreviated sub-scales of the PCRI include Parental Support (SUP),

Satisfaction with Parenting (SAT), Involvement (INV), Communication (COM), Limit Setting (LIM), Autonomy (AUT), and Role Orientation (ROL). Scores were modeled by glmm.

Scores on the Parenting Stress Index – Short Form (PSI-4-SF) subscales improved overall. At pre-intervention, mean scores for the subscales 'PSI-Total' ($M = 93.37$, $SD = 21.72$), 'Parent-Child Dysfunctional Interaction' (P-CDI) ($M = 29.35$, $SD = 8.28$) and 'Difficult Child' (DC) ($M = 37.00$, $SD = 13.02$) were found to be in the clinical range. Program effect appears to have been significant ($p < 0.001$) for the total PSI scale and all subscales (Fig. 2). In all cases, completion of the program was associated with reduced scores. Scores on these subscales were found to have reduced to the sub-clinical range at post-intervention (below the 91st percentile). Of note, for the PSI-Total subscale, the mean difference was a reduction of 9.1 points on the overall PSI scale ($g = 0.467$). Covariate analyses found no significant associations amongst the subscales.

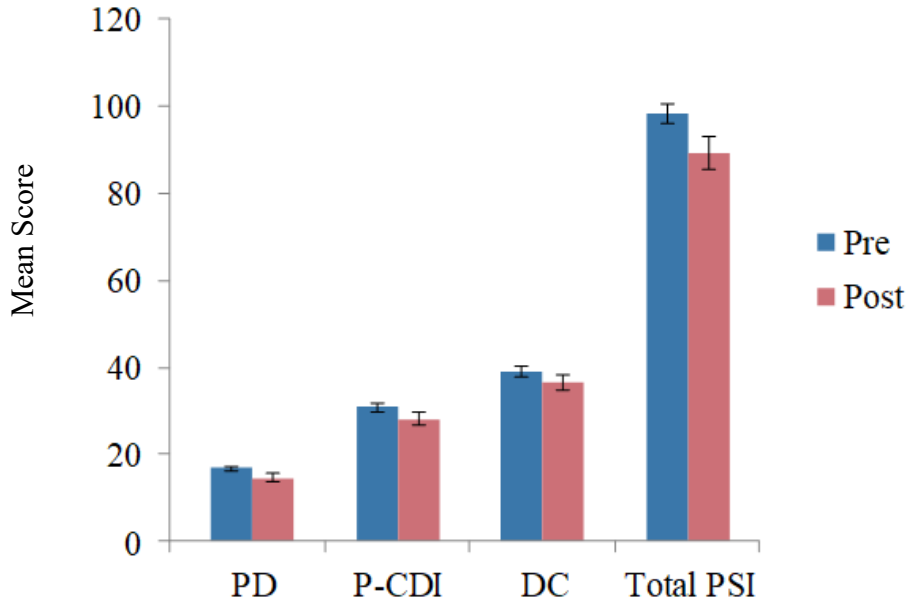

Figure 2. Mean scores of the subscales of the Parent Stress Index -Short Form (PSI-SF) pre- and post-intervention. The abbreviated sub-scales of the PCRI include Defensive scoring (DS),

Parental Distress (PD), Parent-Child Dysfunctional Interaction (P-CDI), and Difficult Child (DC). Scores were modeled by glmm. In all cases the program associated with significantly ($p < 0.001$) improved (reduced) PSI scores and subscale scores.

Scores on the 'Emotional Symptoms' sub-scale of the Strengths and Difficulties Questionnaire sustained a small, non-significant decrease. Scores on all the SDQ subscales were found to be at clinical range at both pre- and post-intervention (scores equaled or exceeded the 90th percentile score). The internal consistency was satisfactory to good (Cronbach's alpha coefficients .70–.83), except for Conduct problems and Peer problems, whose internal consistency was moderate (Cronbach's alpha coefficients .62 and .68 respectively). Mean scores on the 'Emotional Symptoms' subscale of the SDQ (Fig. 3) showed a small ($\Delta = -0.9$, $g = 0.321$) but significant difference ($p = 0.004$). The total SDQ (Fig 3) saw a similar small but non-significant decrease ($\Delta = -1.8$, $g = 0.329$, $p = 0.048$). No significant covariates were found amongst the subscales.

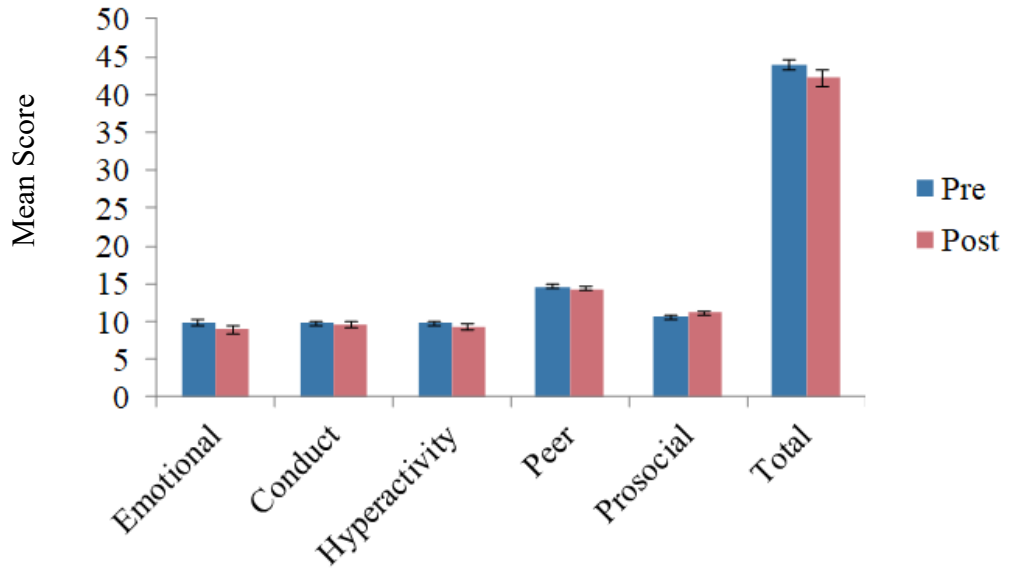

Figure 3. Mean scores of the subscales of the Strength and Difficulties Questionnaire (SDQ) pre- and post-intervention. Strengths and Difficulties Questionnaire was administered at beginning and end of project as described herein. Scores were modeled by glmm. Program administration associated with significant ($p = 0.004$, $p = 0.048$) but small decreases in Emotional subscale and overall SDQ scores.

Discussion

The present study is one of the first empirical examinations of the effectiveness of the COS-P parenting program in enhancing parenting and relational capacities of foster carers, that are intended to benefit the caregiver-child relationship. The overall hypotheses were that the COS-P program would improve the quality of caregiver-child relationships. Moreover, the program was expected to improve participants' strategies for coping with children's negative behaviours and emotions, as well as their own stress and satisfaction as foster carers. In this respect, the present study appears to be the first of its kind in evaluating the benefits of the COS-P program for foster carers.

No main effects of intervention were found for changes in the foster carer-child relationship, as evaluated by the Parent-Child Relational Index (PCRI). This finding is somewhat puzzling, as COS-P aims to enhance the parent-child attachment relationship. Contrary to this finding, recent research (Kohlhoff et al., 2016) found positive changes in the reflective functioning of mothers of toddlers following participation in the program. It is unclear how this change translates to parental behaviour in the context of caregiving relationship and attachment security, as Huber et al. (2015) found no association between maternal reflective functioning and child attachment status following the COS-P program. Future research could incorporate both structured interviews, observational and other self-report measures of the carer-child relationship

to assess whether the relationship of children with attachment difficulties have improved following program. Finally, the null findings could be due, in part, to the timing of the post-intervention evaluation procedures, which occurred immediately following the completion of COS-P and may not have afforded the opportunity to capture observable, measurable changes in carer-child outcomes. Future research would benefit from including follow-up evaluations that extend the immediate aftermath of treatment.

The small and non- significant changes in the emotional symptoms on the Strength and Difficulties Questionnaire (SDQ) appears important given the profile of children referred to the ETS service, who exhibit severe and complex mental health concerns, as reflected in pre-intervention scores being in the clinically significant range across all the scales. While the SDQ has a considerable amount of evidence use in service evaluation (Wolpert, Cheng & Deighton, 2015), it is possible that null findings reflect a 'ceiling effect' of scores on the SDQ – with the measure not being sensitive enough to pick up on changes amongst clinical population with severe and complex symptoms. While reductions in behavioural and emotional symptoms have been reported following the 20-week COS intervention, the findings of the present study indicate a similar trend in response to the 8-week COS-P program. While future replications of this research may benefit from larger sample sizes, the present finding has important public health implications for a short, group-based, cost-effective intervention for children who have been identified as being some of the most vulnerable to adverse outcomes.

The results revealed significantly reduced levels of parent-child dysfunctional interactions and parental distress as measured by the Parent Stress Index (PSI-4-SF).It was also found that there were significant reductions in the reports from the foster carers of their perceptions of their foster child as being difficult to take care of, as well as reduction in the

overall stress related to their role as a foster carer. Parenting foster children can be stressful, particularly when there are difficulties in the carer–child relationship and/or child emotional or behavioural difficulties. But it is important to note the bi-directional relations between parental stress and child wellbeing, that is, increases in parental stress can lead to deterioration of parenting quality, which can, in turn, lead to further escalation of child emotional and behavioural problems, and hence more parental stress (Deater-Deckard & Petrill, 2004). Fundamental to the COS-P protocol is the idea that children's attachment security is enhanced when the caregiver can provide a 'secure base' and be a 'haven of safety' from which the child can explore his or her surroundings (Cooper et al., 2009; Hoffman et al., 2006). Unfortunately, when a caregiver is feeling stressed, helpless or fearful, in the relationship with their child, they are more likely to reject the child's requests for closeness and/or comfort and the infant is more likely to develop an insecure attachment pattern (Lyons-Ruth, 2007; Main & Hesse, 1990). The fact that this brief psychoeducational intervention was shown to be associated with decreases in caregiver helplessness and more positive feelings about the child is therefore promising.

Limitations

It is important to mention the limitations of this study. Firstly, the small sample size is a substantial limitation and means that our results should be viewed as preliminary. We hope that these preliminary findings will motivate other researchers to evaluate COS-P among foster carers, and that our results will be replicated and expanded. Although all participants were encouraged to complete all study measures, we unfortunately had a high rate of non-completion, making it difficult to draw sound conclusions from the data collected. This was due in part to participants being allowed to complete post-test measures at home if desired. In future research, study measures should be completed at a testing site to the extent possible. More generally,

however, foster carers face a number of competing demands due to the high social-emotional and health care needs of the children and the requirements of the child protection system (e.g. attending meetings, facilitating contact with the child's biological family). Many foster carers are of low SES and rely on the allowances paid through the child protection system. All of these barriers impact the ability of foster carers to engage in training and professional development.

Secondly, the absence of a control group and presence of nested data meant that observed improvements may not have been attributable to the intervention. However, given that the outcomes measured in this study were so specific to the aims and objectives of COS-P, we believe that it is unlikely our findings were purely due to either the passage of time or spontaneous change and think there is some suggestive value in comparing participants to themselves before and after receiving an intervention.

Without longitudinal follow-up data, important information about the longer-term effectiveness of the program is unavailable. Future research should therefore incorporate follow-up time points to determine whether the COS-P program is associated with long-term improvements in carer-child functioning. Additionally, documenting the types of child maltreatment concerns for the foster children (e.g. neglect, sexual abuse) may highlight any differences in program's impact. An additional weakness of the study is the reliance on self-report outcome measures. Future studies should utilise clinician-administered interview measures such as the Parent Development Interview (Slade, Aber, Bresgi, Berger & Kaplan 2004) to provide a more reliable indicator of change in parental reflective functioning. The study would have also been improved with the inclusion of independent observational ratings of child and parent interactions to assess whether the self-reported changes were reflected in behavioural and relational change within the dyad, and with additional enrollment criteria in place to standardize

certain sample characteristics, such as the amount of time children had been with foster carers. Finally, independent ratings of integrity of the COS-P treatment program would have improved the quality of the findings.

Summary and conclusion

COS-P is a popular relationship-based parenting education program, but published evidence of its efficacy for foster carers is limited. The current study provides important initial outcome data about the program, showing it to be an effective way of helping foster carers to become more aware of and responsive to their child's attachment needs, while also feeling more positive about their child and less stressed.

Future studies should seek to replicate these findings in larger samples, using randomized controlled designs and investigating changes on other core COS-P intervention target areas, such as attachment outcomes, caregiver sensitivity, responsiveness to child cues, and awareness of the effect of attachment history on caregiving patterns. Additional research on this topic will advance the 'best practices' literature on relationship-based parenting education, as well as inform the development of improved interventions to target particular age groups and parent populations. A fuller understanding of the characteristics that make successful programs successful for various groups will streamline intervention development and deepen clinicians' understanding of the mechanisms by which effective interventions improve behavioural outcomes. The more information clinicians have about the interventions they choose to implement, the better they will be able to gauge the appropriateness of their chosen intervention for the specific population of carers and/or children they serve, ultimately leading to improved clinician efficacy and better care for clients.

References

Abidin, R. R. (2012). Parenting stress index, (PSI-4). *Lutz, FL: Psychological Assessment Resources*.

Ainsworth, M. S. (1979). Infant–mother attachment. *American Psychologist*, *34*(10), 932.

Allen, B., Timmer, S. G., & Urquiza, A. J. (2014). Parent–Child Interaction Therapy as an attachment-based intervention: Theoretical rationale and pilot data with adopted children. *Children and Youth Services Review*, *47*, 334-341.

Andrews, E. (2019). A parenting intervention for middle childhood: An expansion of a Circle of Security intensive individual protocol. *The Educational and Developmental Psychologist*, *36*(1), 27-31.

Briere, J., Johnson, K., Bissada, A., Damon, L., Crouch, J., Gil, E., . . . Ernst, V. (2001). The trauma symptom checklist for young children (TSCYC): reliability and association with abuse exposure in a multi-site study. *Child Abuse & Neglect, 25*(8), 1001-1014.

Cassidy, J., Brett, B. E., Gross, J. T., Stern, J. A., Martin, D. R., Mohr, J. J., & Woodhouse, S. S. (2017). Circle of Security–Parenting: A randomized controlled trial in Head Start. *Development and Psychopathology, 29*(2), 651-673.

Cassidy, J., Woodhouse, S. S., Sherman, L. J., Stupica, B., & Lejuez, C. (2011). Enhancing infant attachment security: An examination of treatment efficacy and differential susceptibility. *Development and Psychopathology, 23*(1), 131-148.

Coffman, J. K., Guerin, D. W., & Gottfried, A. W. (2006). Reliability and validity of the Parent-Child Relationship Inventory (PCRI): Evidence from a longitudinal cross-informant investigation. *Psychological Assessment*, *18*(2), 209.

Cooper, G., Hoffman, K., Powell, B., & Marvin, R. (2011). The circle of security

intervention. *Disorganized Attachment and Caregiving*, *318*.

Cooper, G., Hoffman, K. T., & Powell, B. (2009). Circle of Security: COS-P facilitator DVD manual 5.0. *Unpublished manuscript, Marycliff Institute, Spokane, WA*.

Deater-Deckard, K., & Petrill, S. A. (2004). Parent–child dyadic mutuality and child behavior problems: An investigation of gene–environment processes. *Journal of Child Psychology and Psychiatry, 45*(6), 1171-1179.

Dozier, M., Peloso, E., Lewis, E., Laurenceau, J. P., & Levine, S. (2008). Effects of an attachment-based intervention on the cortisol production of infants and toddlers in foster care. *Development and Psychopathology*, *20*(3), 845-859.

Field, A. (2013). *Discovering statistics using IBM SPSS statistics*. Sage.

Fisher, P. A., Gunnar, M. R., Dozier, M., Bruce, J., & Pears, K. C. (2006). Effects of therapeutic interventions for foster children on behavioral problems, caregiver attachment, and stress regulatory neural systems. *Annals of the New York Academy of Sciences*, *1094*(1), 215-225.

Fisher, P. A., Kim, H. K., & Pears, K. C. (2009). Effects of Multidimensional Treatment Foster Care for Preschoolers (MTFC-P) on reducing permanent placement failures among children with placement instability. *Children and Youth Services Review*, *31*(5), 541-546.

Gerard, A. B. (1994). *Parent-child relationship inventory (PCRI)*: Western Psychological Services.

Goemans, A., van Geel, M., & Vedder, P. (2018). Foster children's behavioral development and foster parent stress: testing a transactional model. *Journal of Child and Family Studies*, *27*(3), 990-1001.

Goodman, R., Ford, T., Simmons, H., Gatward, R., & Meltzer, H. (2000). Using the Strengths

and Difficulties Questionnaire (SDQ) to screen for child psychiatric disorders in a community sample. *The British journal of psychiatry*, *177*(6), 534-539.

He, J. P., Burstein, M., Schmitz, A., & Merikangas, K. R. (2013). The Strengths and Difficulties Questionnaire (SDQ): the factor structure and scale validation in US adolescents. *Journal of abnormal child psychology*, *41*(4), 583-595.

Hoffman, K. T., Marvin, R. S., Cooper, G., & Powell, B. (2006). Changing toddlers' and preschoolers' attachment classifications: the Circle of Security intervention. *Journal of Consulting and Clinical Psychology, 74*(6), 1017.

Horton, E., & Murray, C. (2015). A quantitative exploratory evaluation of the Circle of Security-Parenting program with mothers in residential substance-abuse treatment. *Infant Mental Health Journal, 36*(3), 320-336.

Huber, A., McMahon, C., & Sweller, N. (2015). Improved child behavioural and emotional functioning after Circle of Security 20-week intervention. *Attachment & Human Development, 17*(6), 547-569.

Jonkman, C. S., Schuengel, C., Oosterman, M., Lindeboom, R., Boer, F., & Lindauer, R. J. (2017). Effects of multidimensional treatment Foster Care for preschoolers (MTFC-P) for young foster children with severe behavioral disturbances. *Journal of Child and Family Studies, 26*(5), 1491-1503.

Kersten, P., Czuba, K., McPherson, K., Dudley, M., Elder, H., Tauroa, R., & Vandal, A. (2016). A systematic review of evidence for the psychometric properties of the Strengths and Difficulties Questionnaire. *International Journal of Behavioral Development*, *40*(1), 64-75.

Kohlhoff, J., Hawes, D. J., Mence, M., Russell, A. M., Wedgwood, L., & Morgan, S. (2016).

Emotion regulation strategies and parenting practices among parents of children with clinic-referred conduct problems. *Parenting, 16*(4), 302-319.

Lieberman, A. F., & Zeanah, C. H. (1999). Contributions of attachment theory to infant-parent psychotherapy and other interventions with infants and young children. *Handbook of attachment: Theory, research, and clinical applications*, 555-574.

Lyons-Ruth, K. (2007). The interface between attachment and intersubjectivity: Perspective from the longitudinal study of disorganized attachment. *Psychoanalytic Inquiry*, *26*(4), 595-616.

Main, M., & Hesse, E. (1990). Parents' unresolved traumatic experiences are related to infant disorganized attachment status: is frightened and/or frightening parental behavior the linking mechanism? In M. T. Greenberg, D. Cicchetti, & E. M. Cummings (Eds.), *The John D. and Catherine T. MacArthur Foundation series on mental health and development. Attachment in the preschool years: Theory, research, and intervention* (p. 161–182). University of Chicago Press.

Murray, L., Tarren-Sweeney, M., & France, K. (2011). Foster carer perceptions of support and training in the context of high burden of care. *Child & Family Social Work, 16*(2), 149-158.

Osborn, A. L., Delfabbro, P., & Barber, J. G. (2008). The psychosocial functioning and family background of children experiencing significant placement instability in Australian out-of-home care. *Children and Youth Services Review, 30*(8), 847-860.

Oswald, S. H., Heil, K., & Goldbeck, L. (2010). History of maltreatment and mental health problems in foster children: A review of the literature. *Journal of Pediatric Psychology*, *35*(5), 462-472.

Powell, B., Cooper, G., Hoffman, K., & Marvin, B. (2013). *The Circle of Security intervention: Enhancing attachment in early parent-child relationships*: Guilford Publications, New York, NY.

Sawyer, M. G., Carbone, J. A., Searle, A. K., & Robinson, P. (2007). The mental health and wellbeing of children and adolescents in home-based foster care. *Medical Journal of Australia, 186*(4), 181-184.

Shoemaker, F. E., & Benuto, L. T. (2017). Examining the relationship between child maltreatment and severity of attachment difficulties among children five years of age and older. *Children and Youth Services Review*, *75*, 35-41.

Steele, H., & Steele, M. (Eds.). (2017). *Handbook of attachment-based interventions*. Guilford Publications, New York, NY.

Tilbury, C., Osmond, J., Wilson, S., & Clark, J. (2007). *Good practice in child protection*: Pearson Education Australia.

Van Andel, H. W., Grietens, H., Strijker, J., Van der Gaag, R. J., & Knorth, E. J. (2014). Searching for effective interventions for foster children under stress: a meta-analysis. *Child & Family Social Work*, *19*(2), 149-155.

van IJzendoorn, M. H., Juffer, F., & Duyvesteyn, M. G. (1995). Breaking the intergenerational cycle of insecure attachment: A review of the effects of attachment-based interventions on maternal sensitivity and infant security. *Journal of Child Psychology and Psychiatry, 36*(2), 225-248.

Wolpert, M., Cheng, H., & Deighton, J. (2015). Measurement issues: review of four patient reported outcome measures: SDQ, RCADS, C/ORS and GBO–their strengths and limitations for clinical use and service evaluation. *Child and Adolescent Mental*

Health, *20*(1), 63-70.

Yaholkoski, A., Hurl, K., & Theule, J. (2016). Efficacy of the circle of security intervention: a meta-analysis. *Journal of Infant, Child, and Adolescent Psychotherapy*, *15*(2), 95-103.