

A DESCRIPTIVE STUDY OF A COMMUNITY-BASED HOME-VISITING PROGRAM WITH PRESCHOOL CHILDREN PRENATALLY EXPOSED TO ALCOHOL

Ana Hanlon-Dearman^{1,2}, Sayma Malik³, Julia Wellwood⁴, Karen Johnston⁵, Holly Gammon⁶, Kathy N. Andrew⁶, Breann Maxwell⁷, Sally Longstaffe¹

¹Department of Pediatrics & Child Health, University of Manitoba, Winnipeg, MB.

²Manitoba FASD Centre/ MB FASD Network, Winnipeg, MB.

³Department of Clinical Health Psychology, University of Manitoba, Winnipeg, MB.

⁴Family Services, Winnipeg, MB.

⁵Autism Outreach/Behaviour Psychology Program, SSCY Centre, Winnipeg, MB.

⁶Healthy Child Manitoba Office, Winnipeg, MB.

⁷Manitoba FASD Centre, Winnipeg, MB.

Corresponding Author: ahdearman@rccinc.ca

Abstract

Background

Research suggests that prenatal alcohol exposure (PAE) and Fetal Alcohol Spectrum Disorder (FASD) increases the risk of insecure caregiver-child attachment and related negative child emotional-behavioural outcomes. Research also shows positive effects of attachment-focused interventions in preventing disrupted caregiver-child attachment relationships; however, such interventions have not been specifically adapted for children with FASD.

Objectives

This paper describes the implementation, challenges, and results of a community home-based attachment intervention, Circle of Security[®] (COS), with preschool children affected by PAE/FASD in Manitoba, Canada.

Methods

Twelve caregiver-child dyads completed the FASD adapted COS intervention. Children's ages ranged from 2–5 years.

Results

Results support a positive influence of this individualized intervention on child behaviour and parent efficacy. There was a significant reduction in parent stress that was maintained at 3-month follow-up, and a clinically significant reduction in child behavioural issues was noted. Children showed increased ability to communicate their needs more effectively to their parent. Parents also showed an improvement in their ability to attend to their child's cues.

Conclusions

This study supports the use of community home-based attachment intervention for caregivers of children with PAE/FASD.

Keywords: *Attachment, preschool children, prenatal exposure to alcohol, Fetal Alcohol Spectrum Disorder, Circle of Security*

Secure attachment relationships are critical to the development of well-functioning individuals. Attachment is a neurobiological system which regulates emotional, behavioural, and social relationships.^{1–3} The development of this system, starting in infancy, represents an interaction between the brain's pre-

dedicated attachment networks and experience dependent processes based on the quality of a child's relationships and interactions with significant caregivers.

Children with prenatal alcohol exposure (PAE), or Fetal Alcohol Spectrum Disorder (FASD), often present with complex developmental and emotional-behavioural needs which stress the child-caregiver system and place them at increased risk for attachment-related difficulties.^{4,5} A greater incidence of insecure attachment among infants whose mothers had a history of heavy alcohol use during pregnancy has been previously reported.⁶ Furthermore, clinical evidence suggests that prenatal alcohol exposure increases the risk of insecure or disorganized caregiver-child attachment and related negative child emotional and behavioural outcomes.^{7,8} Children with PAE frequently face increased involvement with the child welfare system, thus increasing the risk of developing insecure or disorganized attachments to primary caregivers due to multiple or disrupted placements.^{9,10}

Risks of socio-emotional problems are decreased when children are in stable caregiving situations from an early age as this decreases exposure to traumatic experiences and promotes positive socio-emotional development.¹¹ Long-term protective relationships support the development of emotional security, reduce the risk of internalizing or externalizing worries and concerns, and promote attachment security. Forming secure attachment relationships during the first years of life is particularly important for children with FASD whose biological vulnerability to dysregulated attachment is often further stressed by environmental instability.¹²

Quality, evidence-informed early interventions that focus on improving social skills, caregiver sensitivity and promoting secure caregiver-child attachment lead to positive outcomes in children with FASD.¹³⁻¹⁶ However, there are few studies examining the efficacy or effectiveness of early interventions, particularly for preschoolers with FASD.¹⁷⁻²⁰

Early behavioural interventions that support caregiver reflective capacity and the enhancement of secure attachment are critical to supporting changes in child attachment security and the child-caregiver relationship.²¹ The capacity of the caregiver to perceive and recognize their own needs as well as their

child's needs, motives, thoughts and feelings (reflective capacity or mentalization) within the context of the attachment relationship, is considered more important and influential than caregiver sensitivity or responsiveness.^{22,23} While such interventions primarily aimed at caregivers have been shown to be effective, those that target both caregivers and their young children together have been proven more effective for families with complex needs.^{24,25}

Home-based attachment-focused interventions are heterogeneous in approach and outcomes but are generally promising.²⁶ Home-visiting programs offer access to services that might otherwise be out of reach for families with complex needs and psychosocial stressors including poverty, mental illness, addiction, incarceration, involvement with child welfare agencies, immigration and acculturation needs, and housing and employment challenges. Intervention services are typically offered in clinics or offices requiring reliable transportation, child-care, a capacity to remember and attend such appointments, and a general belief that such interventions are helpful. These barriers often prevent families with complex needs from accessing services. Given the above, families caring for children affected by FASD could benefit from attachment-focused interventions aimed at providing intensive one-on-one support to both the child and caregiver within a home-visiting model.

CIRCLE OF SECURITY®

The Circle of Security® (COS) intervention is a protocol for clinician guided attachment focused intervention for parents of young children, and is based on the attachment theory of John Bowlby and Mary Ainsworth. It was introduced in 2002 and integrates principles of emotional regulation and attachment.²⁷ The intervention uses graphic representations of child-caregiver attachment behaviours that are accessible and easy to understand; the circle serves as a visual roadmap for caregivers to follow as they increase their observational, inference and reflection skills. The protocol itself involves a series of activities and repeated videotaped interactions between the child and their caregiver, which are reviewed by the therapist who has established him/herself with the caregiver as a secure base from which the attachment relationship

TABLE 1. Ainsworth’s Strange Situation and the Secure Base-Safe Haven Procedures

Ainsworth’s Strange Situation: The Strange Situation was developed by Mary Ainsworth to observe attachment relationships in 12–18 month olds in the laboratory. The procedure is designed to activate the child’s attachment system using structured sequences of parental separation and reunion as a model of distress activation and alleviation.²⁸

Secure Base Safe Haven: The Secure Base Safe Haven is a standardized assessment and coding system for attachment/caregiving patterns using the Circle of Security map. The model uses the Strange Situation procedure to structure observations of caregiver/child interactions in the following areas: patterns of child attachment to the caregiver, patterns of caregiver behaviour in response to the child’s attachment behaviour, including the caregiver’s ability to soothe and organize the child’s emotions and behaviour, and support the child’s exploration, learning and competence.

may be explored. The child’s attachment behaviours are coded using the COS Secure Base-Safe Haven[®] (SBSH) coding procedure based on Ainsworth’s Strange Situation²⁸ (Table 1). The caregiver’s developmental history and attachment working models are assessed using the Circle of Security Interview[®] (COSI).^{29,30}

The model encompasses 3 main behavioural control systems in a child’s world: i) child exploration system; ii) child attachment system; and iii) parent caregiving system.³¹ The protocol contains both educational and therapeutic components designed to: i) increase caregiver observational skills and capacity to recognize and understand their child’s cues; ii) increase caregiver sensitivity and appropriate responsiveness to their child; and iii) increase caregiver self-reflection on their own caregiving behaviours as well as their child’s behaviours.³² COS is appropriate for use with caregivers and children of various ages including infants, toddlers and preschoolers.

Fundamental to the COS model is the therapist’s capacity to serve as a secure base and safe haven for the caregiver to safely examine and explore difficult emotions, and encourage caregiver self-reflection and self-regulation related to increasing awareness of such emotional and behavioural triggers. By sensitively attuning to the caregiver’s needs, the therapist models the emotional safety, security and support that the caregiver wishes to provide to their child. This parallel process between the therapist/caregiver and child/caregiver serves an integral role in safely exploring new and unfamiliar feelings and behaviours.

Implementation of the Circle of Security[®] (COS) treatment model is gaining popularity among clinicians

and programs due to the accessibility of its training materials and its user-friendly presentation. Research by the developers has demonstrated its effectiveness in shifting a child’s attachment classification from “insecure” to “secure” and from “disorganized” to “organized,”³³ although independent research on its effectiveness has been limited.³⁴ Under the umbrella term “COS,” there are several programs available. This study uses a modified version of COS, which is offered via home visits to individual families.

RESEARCH GOALS AND OBJECTIVES

The goal of this community-based study was to examine an innovative attachment based approach to FASD intervention in the community. Using a home-visiting model, the Circle of Security[®] (COS) attachment intervention was delivered to young children and caregivers. This study involved partnerships between practitioners, academics and policymakers in the evaluation of the real-world effectiveness of an attachment-focused intervention for preschool children with PAE, as delivered under routine practice conditions of a provincial government program.

The primary goals of this study were: i) to increase our knowledge on the effectiveness of this intervention in families caring for children with PAE; and ii) to contribute to the development of best practices in FASD intervention in preschool children. Secondary goals of this study were to gather clinical information which would help improve future protocols by informing factors influencing community recruitment and retention, clinician acceptance and satisfaction, data collection, cultural appropriateness and outcomes.

METHODS

Overview

Within the Government of Manitoba's FASD Outreach program, families caring for young children (under 6 years of age) with PAE are supported by therapists who deliver home-based specialized behavioural supports including the Circle of Security® (COS) program.³⁵ The program offers support to all families, with a greater number of foster families receiving support. Children were referred for COS support by the clinical assessment team at the provincial FASD assessment clinic, and the provincial Family Services FASD Outreach program. The COS intervention was designed to take place over 9 months and approximately 36 sessions.

STUDY DESIGN AND PARTICIPANT RECRUITMENT

Sample Population and Recruitment

Families with preschool children with FASD or confirmed prenatal exposure to alcohol who were referred to the provincial FASD Outreach program or the FASD Family Support, Education, and Counselling Program, the 2 main programs for community-based preschool support for children with FASD, were the focus of recruitment for this study. Over a 36-month period (January 2011-December 2013) all participants involved in the study were recruited from the provincial FASD Outreach program. Eligible families were informed of the study and informed consent was obtained from the legal guardian of the child by a program supervisor who was not involved in the clinical work of the program. A total of 12 child-caregiver dyads were randomized to receive the intervention. Those who did not choose to receive the study intervention continued to receive standard behavioural support through the program in accordance with their specific needs.

Inclusion and Exclusion Criteria for Participants

Two criteria were required for a family (child-caregiver dyad) to be included in the attachment intervention:

i) the child was confirmed to have PAE, and had been clinically evaluated as having FASD or considered "at risk" for FASD based on their confirmed history of PAE and clinical multidisciplinary assessment at the provincial FASD diagnostic centre using the Canadian FASD diagnostic guidelines*; and ii) evidence of disrupted caregiver behaviours or problems in the child-caregiver relationship as identified through a screening process using the SBSH procedure based on Ainsworth's Strange Situation³⁶ (see Table 1) and clinical judgment.

Exclusion criteria included: i) children in care with instability in placement defined as more than 2 placements in the last 6 months; ii) children with an Autism Spectrum Disorder diagnosis; iii) children with a developmental quotient less than 50; iv) children with sensory impairments (hearing or vision impaired); v) children who were otherwise involved in attachment support therapy; and vi) children with caregivers experiencing clinical depression, addiction, violence or significant personality problems.

Procedure

Caregivers of children on the wait list for the FASD Outreach Program were approached to participate in this study by supervisors of the program. Once caregivers/legal guardians gave consent to be considered for the study, the study was explained and caregivers were screened using clinical interview to see if they were an appropriate candidate for COS. If so, they were scheduled for the SBSH procedure as the primary instrument assessing attachment security. The SBSH was conducted by the Family Services' therapists, and coded by an independent assessor blinded to treatment allocation. Randomization would then occur to either the COS intervention or wait list control group with treatment as usual (TAU). TAU consisted of behavioural assessment and interventions focused on education regarding PAE related challenges, as well as proactive and reactive behavioural intervention strategies.

* Preschoolers seen with confirmed prenatal exposure to alcohol were assessed using the Canadian Guideline criteria for FASD diagnosis.³⁷ These criteria define domains of brain assessment, each of which must be comprehensively assessed and meet threshold definitions for neurodevelopmental impairment.³⁷ Preschoolers may not be able to be assessed in each of these domains until school age, and thus non-dysmorphic well-grown preschoolers with clinical confirmation of prenatal alcohol exposure and evidence of neurodevelopmental impairment may be considered "at risk" for FASD until they are old enough to complete assessment.

TABLE 2. Secondary Outcome Instruments

<p>Parenting Scale is a self-report measure of discipline practices including laxness, over-reactivity, and hostility. The scale has good internal consistency and test-retest reliability and scores are consistent with other measures of dysfunctional discipline and child misbehaviour.³⁸</p>
<p>Parenting Stress Index (PSI) is a self-report measure of parental stress, parent-child interaction style, and difficult child behaviour as reported by caregivers.³⁹ The PSI can be used to evaluate programs aimed at improving parenting skills and is considered valid in predicting observed parenting behaviour and children's current and later behavioural and emotional outcomes.</p>
<p>Depression Anxiety Stress Scale (DASS) is a self-report measure of depression, anxiety, and stress.⁴⁰ The scales of the DASS show high internal consistency, produce meaningful discriminations across different settings, and are appropriate for measuring emotional states of caregivers over time.</p>
<p>Strengths and Difficulties Questionnaire (SDQ) is a parent report measure of the psychological adjustment of children and youth.⁴¹⁻⁴⁴ The SDQ generates total scores and subscores for emotional symptoms, conduct problems, hyperactivity-inattention, peer difficulties, and prosocial behaviours. The SDQ is reliable across time and informants, and consistent with independently diagnosed psychiatric disorders.</p>

Families receiving TAU were eligible to receive the COS intervention at a later time.

Pre-treatment assessment also included a set of self-rated questionnaires measuring caregiver behaviours and practices, child-caregiver interactions, caregiver depression, anxiety and stress, and child behaviours (Table 2). The same standardized assessments were completed at the end of treatment (post-tests) and at follow-up (3 months post-treatment). Due to attrition and loss of contact with families, post-test and follow-up assessments were not completed with all families, and thus not available for review and comparison.

In the first and second sessions of treatment, the Circle of Security Interview[®] (COSI) was administered to caregivers to guide treatment. The therapist used clinical judgment and discretion to determine if and when the COSI would be administered. As a result, all caregivers did not complete the COSI and results are not available for review.

ANALYSIS

This study was originally conceived as a randomized controlled trial (RCT) with wait list control group (TAU). However, implementation and evaluation under real life conditions challenged the original intent: there were a low number of referrals, low adherence, and a high number of missed appointments. Thus the data is reported as an implementation study. As a result of the small sample size ($N = 12$), the data collected

has been examined qualitatively regarding observed changes and outcomes.

To determine preliminary indicators of effectiveness of COS, we used descriptive variables to evaluate the pre-post change. The sample size in this pilot study did not permit further statistical analysis to determine statistically significant intervention effects. Given that the intervention was modified and had never been implemented in a large scale FASD project, the focus of this study was to pilot and evaluate the feasibility of this intervention in child-caregiver dyads affected by FASD in the community environment.⁴⁵

ETHICS APPROVAL

This study was approved by the Health Research Ethics Board at the University of Manitoba, HREB# HS15036 (H2012:015).

RESULTS

Participant Characteristics

Twelve child-caregiver dyads participated in this study between 2011-2014. Eight dyads completed the COS intervention with 4 additional dyads in the TAU control group. Children's ages ranged from 2 years 11 months to 5 years 11 months. The mean age was 4.1 years. There were 10 male and 2 female children. In the COS group, 6 of the 8 children were placed in foster care at or shortly after birth including 5 non-kinship placements and 1 kinship placement (grandparent).

The remaining 2 children in the intervention group lived with a biological relative; one placed at birth with a grandmother, the other living with his birth father, each with a history of being in foster care. Caregivers in our study did not include any biological mothers; there was one biological father. All 4 children in the TAU group were in non-kinship foster placements.

SBSH Procedure

Classification of attachment security was determined using the SBSH. Prior to COS intervention, all children in the intervention group were identified as having an insecure attachment to their primary caregiver, primarily avoidant attachment with one ambivalent/resistant attachment classification. In 25% of the cases, COS treatment resulted in a shift to secure attachment at post-intervention and follow-up. These shifts occurred with families who completed all 5 phases of the intervention. Three additional children displayed increased signs of attachment security, although not significant enough to shift classifications from avoidant to secure. One child maintained an avoidant attachment style and 2 of the dyads did not complete the post-intervention or follow-up SBSH assessment.

Parenting Stress Index

At post-test, the Parent Stress Index (PSI) showed an average reduction of 15.4% in the total test score indicating a general reduction in perceived caregiver stress immediately following the intervention. This reduction in stress was maintained at the 3-month follow-up, with an average reduction of perceived stress of 10.5% from the pre-test scores. Subscales changes noted:

- Defensive Responding (DR), a measure of the caregiver's tendency to present themselves favourably, showed a slight increase of 6% following intervention, and further increase of almost 16% at 3-month follow-up
- Parental Distress (PD), a measure of personal factors impacting stress in their role as a caregiver, showed a 31% reduction immediately following intervention and relative stability (almost 27%) at 3-month follow-up
- Parent Child Dysfunctional Interaction (P-CDI), describing caregiver perception of disappointment in or rejection by the child, showed a small

reduction of 6.7% immediately following the intervention and 6.5% at 3-month follow-up

- Difficult Child (DC), describing caregiver perception of child characteristics (difficult or easy to manage), showed no significant change immediately following (−0.6%) or at 3-month follow-up (−0.1%)

Depression Anxiety Stress Scale (DASS)

As a general measure of negative emotional states, the Total DASS score showed no significant changes post intervention or at the three-month follow-up.

Parenting Scale

No significant changes were found in the Parenting Scale Total Score immediately following the intervention or at follow-up. Four of the original participants did not complete the post-intervention measure and 5 of the original participants did not complete the follow-up measure.

Strengths and Difficulties Questionnaire (SDQ)

No significant changes were reported in the SDQ at post-test or follow-up. A minimal (3%) reduction in difficulties total score (combination of Emotional Symptoms, Conduct Problems, Hyperactivity/Inattention, and Peer Relationship Problems) at 3-month follow-up was found compared to pre-test, with an insignificant improvement (1%) in Prosocial Behaviour. Sub-scale scores also showed minimal change at follow-up. Six of the original participants did not complete the post-intervention or follow-up measure and a significant number of questionnaires were not returned

DISCUSSION

This study represents findings of a community-based home-visiting attachment intervention supporting enhanced caregiver sensitivity in families caring for preschool children with PAE/FASD.

There were clinically important and positive changes observed using this home-visiting model of the COS intervention. There was a reduction in child behavioural challenges including resolution of sleep difficulties, a significant reduction in tantrums, fewer instances of “miscues” (indirect expressions of needs) and generally less resistant and aggressive behaviour. Children in the intervention group also demonstrated

increased capacity to approach and express their needs directly to their caregiver, give direct behavioural cues about their needs, verbalize emotional needs, request help directly, and self-regulate emotions. Notable improvements were also observed in the quality of play which was more productive and sustained over longer periods of time.

There were also significant successes of the COS intervention on caregiver perceptions of their child's behaviours and subsequent self-perceived caregiver competence. Caregivers reported fewer challenges and used fewer negative attributions to describe their children's actions. They became more confident taking charge and setting limits when necessary, more effective at organizing their child's emotions and managing tantrums and distress, and developed increased capacity in staying present with their child's needs and feelings rather than distracting or ignoring their distress. Caregivers also showed improvements in their ability to follow their child's lead and sensitively attune and interpret their child's needs with more accurate attributions. They were reported to be fully invested and engaged in the COS process and receptive to understanding how their own sensitivities can interfere with their capacity to attune and respond to their child's needs in the moment.

Measures of caregiver distress showed improvement immediately following COS intervention and this improvement was sustained at 3-month follow-up. Negative caregiver perceptions of the child also showed a modest but sustained improvement at follow-up. Interestingly, secondary outcomes including maternal depression, self-esteem, and parental distress were not sensitive to intervention, consistent with findings from other studies.⁴⁶

Caregiver sensitivity and reflective function are critical for attunement and responsiveness to a child's emotional needs.^{47,48} However, the latter is considered more important as it underlies the caregiver's ability to self-regulate in the face of a child's distress. Previously measured as a unitary construct, reflective function is now considered to be multi-faceted, consisting of self-mentalization (capacity to reflect on one's own emotions and behaviours) and child mentalization (capacity to reflect on their child's emotions and behaviours and their interactions).^{49,50} In our study

parental reflective function was measured indirectly by way of progress through progress through phases and showed positive incremental progress.⁵¹

Mentalization is critical for processing traumatic experiences and developing resilience.⁵³⁻⁵⁵ Such capacity for self-mentalization of painful emotions is considered a better predictor of caregiving skills and difficulties than global caregiving responsiveness and sensitivity.^{56,57} Moreover, a caregiver's capacity for self-mentalization also appears to serve a more critical role in improving caregiving relationships and caregiver responsiveness than their capacity for child mentalization.⁵⁸ Thus, the recommended intervention approach begins with support for the caregiver as they increase their ability to self-reflect and self-regulate while processing their own traumatic experiences.

Most attachment research uses a categorical model to identify distinct patterns of organizing attachment behaviours (e.g. Secure, Insecure – Avoidant, and Insecure – Resistant), with potential disorganization influencing the primary attachment strategy. However, more recent work suggests a multivariate dimensional model for understanding underlying attachment constructs.⁵⁹ In our study, qualitative shifts toward security were noted for several families who received the COS intervention, though the improvements were not significant enough to be considered reflections of established secure attachment. These shifts support a conceptualization of attachment classifications as more fluid over time. In light of research highlighting the significance of trauma-related mentalization and its impact on sensitive caregiving, these subtle shifts within the same attachment classification (e.g. avoidant with secure behaviours) should be considered clinically relevant and informative.

Challenges

This study set out to understand the impact of COS delivered in a home-visiting intervention model to children affected by alcohol exposure. As with most clinical research conducted in "real-world" settings and conditions, our group faced a myriad of challenges. At the individual family level, there were challenges with recruitment and adherence to the intervention, acceptability of the research project, difficulty obtaining consent and buy-in from child welfare workers, challenges establishing trust, changes in foster

placements, multiple missed appointments and high rates of attrition unrelated to the study, as well as incomplete/missing data. As with any community-based intervention, our home visitors experienced additional challenges related to uncertainties in the home and community (e.g., additional guests, housing related crises, loss, etc).

The strengths of community-based work in its flexibility and responsiveness to needs, also has its challenges at times. A number of community and clinical factors changed throughout the duration of the study. Community factors included a relatively low number of program referrals received, a change in office locations, changes in clinical supervisors, as well as changes in the clinical responsibilities/roles that the therapists had within their clinical positions over the period of the study. The impact of each of these changes was discussed at regular research oversight committee meetings. This study is unique in its ability to support a long-term research partnership with clinical community-based programs.

Participants involved in this study represent a small segment of the total population of families who are impacted by FASD. While the sample size is limited, the everyday challenges of the participants involved provide an opportunity to better understand the complex relationships between caregivers and their children with FASD. Complex psychosocial stressors were present for many of our families and influenced their capacity to participate in treatment interventions i.e. as the demands on basic needs increased, capacity for higher order reflection and perspective taking decreased as emphasis shifted to meeting these basic needs.

While we set out to conduct an RCT to evaluate the effectiveness of COS delivered in a home-visiting model as compared with a behavioural TAU intervention, the limitations we faced did not allow for this. Instead, we have considered how we can understand the results we obtained from our study qualitatively. While many of the children in the TAU group experienced reductions in tantrums and emotional reactivity, no shifts in attachment classification were observed (i.e., no evidence of increased secure-type behaviours). The COS group displayed clinically important shifts in child attachment security, caregiver sensitivity and

responsiveness, self and child mentalization in addition to positive behavioural shifts in many domains of child functioning. Integrating this deeper level of change requires intensive intervention, such as COS, aimed at safe exploration and mentalization of complex and difficult emotions. Vulnerable complex children such as those with PAE, trauma and neglect, struggle significantly with self-regulation and need interventions that offer a more comprehensive approach to address self-regulation, interrupt the transmission of trauma, and build resilience in the long term.

Given the above challenges, neither numbers nor completed protocols allowed for analysis of data within the original intent of a RCT. The knowledge from this trial was thus analyzed and presented qualitatively post hoc as an implementation analysis. It is hoped that the lessons learned from this community-based implementation may inform future protocols.

CONCLUSIONS

Secure attachment relationships are essential to early development, resilience, and success later in life.⁶⁰ This study reports on the successful implementation of a home-based attachment focused intervention for complex families with pre-schoolers who have been prenatally exposed to alcohol. Due to our small sample size and study challenges, we must be cautious about over-generalizing from our findings. However, we can suggest that intervention focusing on engaging caregivers in perspective taking and self-reflection led to important shifts in child perceptions of caregiver availability, emotional responsiveness, and attunement as measured by attachment security. All children displayed decreased behavioural dysregulation and experienced increased capacity to successfully approach attuned caregivers with expectations of having their emotional and physical needs met.

Prenatal alcohol exposure increases the risk of foundational neurodevelopmental and behavioural challenges that, in combination with challenges due to changes or instability in the child-caregiver relationship, increase the risk of attachment-related difficulties.^{61,62} By intervening early in development, there is increased opportunity to support the stability of vulnerable families who face increased risk of caregiver burnout due to FASD-related behavioural

challenges. Attachment based support such as COS can increase accuracy of caregiver perceptions and expectations, increase caregiver self-reflection and self-mentalization of difficult feelings, and enhance realistic expectations of developmental capacities. These changes can lead to positive behavioural shifts, which further reinforce a caregiver's sense of competence and confidence, as well as increase pleasure in the caregiving relationship

Many community programs and governmental agencies are interested in understanding which interventions can be delivered in an effective, cost-efficient and timely manner to address complex needs of highly vulnerable families. There remains considerable debate about which interventions can offer such results and commonly, behavioural interventions are deemed by many as the "gold standard" evidence-based treatment of choice for many mental health and behavioural challenges. This study supports the effective use of COS with families caring for young children with PAE. and provides qualitative evidence to inform the development of future programming across other developmental stages.

REFERENCES

1. Bowlby J. Attachment and loss (2nd ed. Vol. 1). New York: Basic Books; 1969.
2. Bowlby J. Attachment theory and its therapeutic implications. *Adolesc Psychiatr* 1978;6:5–33.
3. Bretherton I and Munholland, K. Internal working models in attachment relationships: Elaborating a central construct in attachment theory (Shaver, JCP Ed.). New York: Guilford Press; 2008.
4. O'Connor, MJ, Kogan, N, and Findlay, R. Prenatal alcohol exposure and attachment behavior in children. *Alcohol Clin Exp Res* 2002; 26(10), 1592–602. doi:10.1097/01.ALC.0000034665.79909.F0
5. O'Connor, MJ, Sigman, M, and Brill, N. Disorganization of attachment in relation to maternal alcohol consumption. *J Consult Clin Psychol* 1987;55(6):831–6.
6. O'Connor, MJ, Sigman, M, and Brill, N. Disorganization of attachment in relation to maternal alcohol consumption. *J Consult Clin Psychol* 1987;55(6):831–36.
7. Molteno CD, Jacobson JL, Carter RC, et al. Infant emotional withdrawal: a precursor of affective and cognitive disturbance in fetal alcohol spectrum disorders. *Alcohol Clin Exp Res* 2014; 38(2):479–88. doi:10.1111/acer.12240
8. O'Connor MJ, Sigman M, and Brill N. Disorganization of attachment in relation to maternal alcohol consumption. *J Consult Clin Psychol* 1987;55(6):831–36.
9. Hanlon-Dearman A, Green CR, Andrew G, et al. Anticipatory guidance for children and adolescents with Fetal Alcohol Spectrum Disorder (FASD): practice points for primary health care providers. *J Popul Ther Clin Pharmacol* 2015;22(1):e27–56.
10. Lange S, Shield K, Rehm J, and Popova S. Prevalence of fetal alcohol spectrum disorders in child care settings: a meta-analysis. *Pediatrics* 2013;132(4):e980–995. doi:10.1542/peds.2013-0066.
11. Koponen AM, Kalland M, and Autti-Ramo I. Caregiving environment and socio-emotional development of foster-placed FASD-children. *Child Youth Serv Rev* 2009;31:1049–56. doi:10.1016/j.childyouth.2009.05.006
12. Koponen AM, Kalland M, and Autti-Ramo I. Caregiving environment and socio-emotional development of foster-placed FASD-children. *Child Youth Serv Rev* 2009;31:1049–56. doi:10.1016/j.childyouth.2009.05.006
13. Bertrand J. Interventions for children with fetal alcohol spectrum disorders (FASDs): overview of findings for five innovative research projects. *Res Dev Disabil* 2009;30(5):986–1006. doi:10.1016/j.ridd.2009.02.003
14. O'Connor MJ, Frankel F, Paley B, et al. A controlled social skills training for children with fetal alcohol spectrum disorders. *J Consult Clin Psychol* 2006;74(4):639–648. doi:2006-09621-001 [pii]
15. Olson HC, Oti R, Gelo J, and Beck S. "Family matters:" fetal alcohol spectrum disorders and the family. *Dev Disabil Res Rev* 2009;15(3):235–49. doi:10.1002/ddrr.65
16. Paley B and O'Connor MJ. Behavioral interventions for children and adolescents with fetal alcohol spectrum disorders. *Alcohol Res Health* 2011;34(1):64–75.
17. Paley B and O'Connor MJ. Intervention for individuals with fetal alcohol spectrum disorders: treatment approaches and case management. *Dev Disabil Res Rev* 2009;15(3):258–67. doi:10.1002/ddrr.
18. Paley B and O'Connor M J. Behavioral interventions for children and adolescents with fetal alcohol spectrum disorders. *Alcohol Res Health* 2011;34(1):64–75.
19. Peardon E, Rhys-Jones B, Bower C, and Elliott EJ. Systematic review of interventions for children with Fetal Alcohol Spectrum Disorders. *BMC Pediatr* 2009;9:35. doi:1471–2431-9-35 [pii]

20. Premji S, Benzies K, Serrett K, and Hayden KA. Research-based interventions for children and youth with a Fetal Alcohol Spectrum Disorder: revealing the gap. *Child Care Health Dev* 2007;33(4):389–97; discussion 398–400. doi:CCH692 [pii] 10.1111/j.1365-2214.2006.00692.x
21. Olson HC, Oti R, Gelo J, and Beck S. "Family matters:" fetal alcohol spectrum disorders and the family. *Dev Disabil Res Rev* 2009;15(3):235–49. doi:10.1002/ddrr.65
22. Dunst CJ and Kassow DZ. Caregiver sensitivity, contingent social responsiveness, and secure infant attachment. *J Early Intensive Behav Intervent* 2008;5(1).
23. Fonagy P, Steele H, and Steele M. Maternal representations of attachment during pregnancy predict the organization of infant-mother attachment at one year of age. *Child Dev* 1991;62(5):15. doi:10.1111/1467-8624.ep9112161635
24. Pillhofer M, Spangler G, Bovenschen I, et al. Pilot study of a program delivered within the regular service system in Germany: effect of a short-term attachment-based intervention on maternal sensitivity in mothers at risk for child abuse and neglect. *Child Abuse Negl* 2015;42:163–73. doi:10.1016/j.chiabu.2014.07.007
25. Suess GJ, Bohlen U, Carlson EA, et al. Effectiveness of attachment based STEEP intervention in a German high-risk sample. *Attach Hum Dev* 2016;1–18. doi:10.1080/14616734.2016.1165265
26. Pillhofer M, Spangler G, Bovenschen I, et al. Pilot study of a program delivered within the regular service system in Germany: effect of a short-term attachment-based intervention on maternal sensitivity in mothers at risk for child abuse and neglect. *Child Abuse Negl* 2015;42:163–73. doi:10.1016/j.chiabu.2014.07.007
27. Marvin R, Cooper G, Hoffman K, and Powell B. The Circle of Security project: attachment-based intervention with caregiver-pre-school child dyads. *Attach Hum Dev* 2002;4(1):107–24. doi:10.1080/14616730252982491
28. Ainsworth MD and Bell SM. Attachment, exploration, and separation: illustrated by the behavior of one-year-olds in a strange situation. *Child Dev* 1970;41(1):49–67.
29. Hoffman KT, Marvin RS, Cooper G, and Powell, B. Changing toddlers' and preschoolers' attachment classifications: the Circle of Security intervention. *J Consult Clin Psychol* 2006;74(6):1017–26. doi:10.1037/0022-006X.74.6.1017
30. Marvin R, Cooper G, Hoffman K, and Powell B. The Circle of Security project: attachment-based intervention with caregiver-pre-school child dyads. *Attach Hum Dev* 2002;4(1):107–24. doi:10.1080/14616730252982491
31. Zanetti C, Powell B, Cooper G, and Hoffman K. The Circle of Security intervention: Using the therapeutic relationship to ameliorate attachment security in disorganized dyads. *Disorg Attach Care* 2011;318–42.
32. Hoffman KT, Marvin RS, Cooper G, and Powell B. Changing toddlers' and preschoolers' attachment classifications: the Circle of Security intervention. *J Consult Clin Psychol* 2006;74(6):1017–26. doi:10.1037/0022-006X.74.6.1017
33. Hoffman KT, Marvin RS, Cooper G, and Powell B. Changing toddlers' and preschoolers' attachment classifications: the Circle of Security intervention. *J Consult Clin Psychol* 2006;74(6):1017–26. doi:10.1037/0022-006X.74.6.1017
34. Mercer J. Examining Circle of Security™: A review of research and theory. *Res Social Work Pract* 2015;25(3), 11. doi: 10.1177/1049731514536620
35. Marvin R, Cooper G, Hoffman K, and Powell B. The Circle of Security project: attachment-based intervention with caregiver-pre-school child dyads. *Attach Hum Dev* 2002;4(1):107–24. doi:10.1080/14616730252982491
36. Ainsworth MD and Bell SM. Attachment, exploration, and separation: illustrated by the behavior of one-year-olds in a strange situation. *Child Dev* 1970;41(1):49–67.
37. Chudley AE, Conry J, Cook JL, et al. Fetal alcohol spectrum disorder: Canadian guidelines for diagnosis. Ottawa: Public Health Agency of Canada's National Advisory Committee on Fetal Alcohol Spectrum Disorder; 2005.
38. Arnold DS, O'Leary SG, Wolff LS, and Acker MM. The parenting scale: A measure of dysfunctional parenting in discipline situations. *Psychol Asses* 1993;5(2):137–44.
39. Abidin R, Ed. Parenting Stress Index™, 3rd Edition (PSI™-3). Available at: <http://www4.parinc.com/Products/Product.aspx?ProductID∇PSI>
40. Lovibond SH and Lovibond PF. Manual for the Depression Anxiety Stress Scales. (2nd. Ed.) Sydney: Psychology Foundation; 1995.
41. Ford T, Hutchings J, Bywater T, et al. Strengths and Difficulties Questionnaire Added Value Scores: evaluating effectiveness in child mental health interventions. *Br J Psychiatr* 2009;194(6):552–8. doi: 10.1192/bjp.bp.108.052373.
42. Goodman A & Goodman R. Strengths and difficulties questionnaire as a dimensional measure of child mental health. *J Am Acad Child Adolesc Psychiatr* 2009;48(4):400–3. doi: 10.1097/CHI.0b013e3181985068.

43. Goodman R. Psychometric properties of the Strengths and Difficulties Questionnaire (SDQ). *J Am Acad Child Adolescent Psychiatr* 2001;40:1337–45.
44. Goodman R, Renfrew D, Mullick M. Predicting type of psychiatric disorder from Strengths and Difficulties Questionnaire (SDQ) scores in child mental health clinics in London and Dhaka. *Eur Child Adolescent Psychiatr* 2000;9:129–4.
45. Bowen DJ, Kreuter M, Spring B, et al. How we design feasibility studies. *Am J Prev Med* 2009;36(5):452–57. doi:10.1016/j.amepre.2009.02.002
46. Letourneau N, Tryphonopoulos P, Giesbrecht G, et al. Narrative and Meta-Analytic Review of Interventions Aiming to Improve Maternal-Child Attachment Security. *Infant Ment Health J* 2015;36(4):366–87. doi:10.1002/imhj.21525
47. Huber A, McMahon CA, and Sweller N. Efficacy of the 20-Week Circle of Security Intervention: Changes in Caregiver Reflective Functioning, Representations, and Child Attachment in an Australian Clinical Sample. *Infant Ment Health J* 2015;36(6):556–74. doi:10.1002/imhj.21540
48. Suchman NE, DeCoste C, Castiglioni N, et al. The Mothers and Toddlers Program, an attachment-based parenting intervention for substance using women: post-treatment results from a randomized clinical pilot. *Attach Hum Dev* 2010;12(5):483–504. doi:10.1080/14616734.2010.501983
49. Suchman NE, DeCoste C, Leigh D, and Borelli J. Reflective functioning in mothers with drug use disorders: implications for dyadic interactions with infants and toddlers. *Attach Hum Dev* 2010;12(6):567–85. doi:10.1080/14616734.2010
50. Huber A, McMahon CA, and Sweller N. Efficacy of the 20-Week Circle of Security Intervention: Changes in Caregiver Reflective Functioning, Representations, and Child Attachment in an Australian Clinical Sample. *Infant Ment Health J* 2015;36(6):556–74. doi:10.1002/imhj.21540
51. Allen JG. *Mentalizing in the development and treatment of attachment trauma*. London: Karnac Books; 2013.
52. Fonagy P. *Attachment theory and psychoanalysis*. London: Karnac Books; 2001.
53. Fonagy P, Jurist EL, Target M. *Affect regulation, mentalization, and the development of the self*. New York, NY: Other Press; 2002.
54. gergely g. the role of contingency detection in early affect–regulative interactions and in the development of different types of infant attachment. *Social Deve* 2004;13(3):11. doi:10.1111/j.1467-9507.2004.00277.x
55. Allen JG. *Mentalizing in the development and treatment of attachment trauma*. London: Karnac Books; 2013.
56. Fonagy P. *Attachment theory and psychoanalysis*. London: Karnac Books; 2001.
57. Suchman NE, DeCoste C, Leigh D, and Borelli J. Reflective functioning in mothers with drug use disorders: implications for dyadic interactions with infants and toddlers. *Attach Hum Dev* 2010;12(6):567–85. doi:10.1080/14616734.2010
58. Fraley RC and Spieker SJ. (2003). Are infant attachment patterns continuously or categorically distributed? A taxometric analysis of strange situation behavior. *Dev Psychol* 39(3):387–404.
59. National Scientific Council on the Developing Child. *Young children develop in an environment of relationships*. Available at://www.developingchild.net/10.1186/1471-2431-9-35
60. Hanlon-Dearman A, Green CR, Andrew G, LeBlanc N, and Cook JL. Anticipatory guidance for children and adolescents with Fetal Alcohol Spectrum Disorder (FASD): practice points for primary health care providers. *J Popul Ther Clin Pharmacol* 2015;22(1):e27–56.
61. O'Connor MJ, Kogan N, and Findlay R. Prenatal alcohol exposure and attachment behavior in children. *Alcohol Clin Exp Res* 2002;26(10):1592–602. doi:10.1097/01.ALC.0000034665.79909.F0