

Case Study 1: An Evidence Based Practice Review Report

How effective is the Circle of Security intervention in improving caregiver-child relationships?

Summary

The Circle of Security (COS) intervention was developed to provide intervention for high-risk caregiver-child dyads who may be experiencing difficulties with the attachment relationship. Since its development in 2002, there have been numerous studies examining its effectiveness, however most of these have targeted parental outcomes. This systematic literature review critically considers five studies, conducted from 2011-2018, to assess whether the intervention is effective in improving the caregiver-child relationship.

Studies were reviewed using Gough's (2007) Weight of Evidence principles and judged on their methodological quality, methodological relevance and topic relevance. Results of this judgement are discussed in relation to the findings of each paper and resulting implications to the field of attachment intervention research.

Due to extensive variation between study design, results and analysis, it is concluded that there is limited evidence to support the effectiveness of the COS intervention. Only two studies were able to establish a main effect of the intervention on improving caregiver-child relationships and both exhibit

limitations in their methodology and resulting analysis. However, there is some evidence to suggest that certain variables exist which moderate the effect of the intervention on caregiver-child relationships. Future research is required in order to explore these pathways further.

Introduction

Research indicates that secure attachment has a positive influence on a range of outcomes, which can continue into adolescence and adulthood: greater social and emotional competence (Laible, 2007), increased self-esteem (Laible, Carlo & Roesch, 2004) and higher emotion regulation (Panfile & Laible, 2012). Therefore, promoting positive relationships between infants and their caregivers through sensitive attuned parenting is vital, as highlighted in the Public Health England (2016) publication of Health Matters: Giving Every Child the Best Start In Life. Attachment theory, first conceptualised by Bowlby (1958) has inspired several interventions that aim to target early attachment between young children and their caregivers, including the Circle of Security.

In order to examine early attachment and identify key areas for support, specific patterns of behaviour and interactions have been categorised into distinct types of attachment relationship that can be reliably identified. In initial research, Ainsworth (1970) identified three styles of attachment: secure, insecure-avoidant and insecure-ambivalent. Main and Solomon (1990) later identified a fourth attachment style: disorganised.

What is the Circle of Security?

The Circle of Security (COS) intervention was developed by Marvin, Hoffman, Cooper and Powell (2002) to promote secure attachment between caregivers and their children (aged 1-4 years) using the theoretical basis of attachment theory. Core constructs, such as the caregiver's role as a secure base and safe haven (Ainsworth, Blehar, Waters & Wall, 1978), are explored throughout the program, in order to support caregivers in developing secure relationships with their children, through individualised pathways.

The intervention is conducted by professionals who have completed Circle of Security training (group facilitators), who work with groups of six caregivers. It has been developed specifically to target high-risk dyads, i.e. those with an increased probability of developing insecure or disorganised attachment patterns. Prior to the start of the intervention, caregiver-child dyads are filmed interacting by the group facilitators; these videos are used as a pre-assessment measure and are coded by the facilitators to determine the dyad's attachment style. Individualised goals are determined, based on the video footage, which is then edited into "video-vignettes". Throughout the course of the intervention, caregivers watch and analyse the vignettes and engage in psychoeducational and therapeutic discussion with group facilitators and the group as a whole (Hoffman, Marvin, Cooper & Powell, 2006).

Within ten days of the intervention ending, a post-assessment measure is conducted by group facilitators, using the same video recording techniques, to analyse caregiver interactions for any signs of change in attachment styles.

With attachment theory at the core of all sessions, caregivers and group facilitators discuss the foundations of attachment and exploratory behaviour and their importance to development. Caregivers are trained to recognise the signals exhibited by children and how to respond to these. There is a strong emphasis on the concept of “miscues” (misleading messages exhibited by children) and how these are used strategically by children (Marvin et al., 2002). This can result in a “self-perpetuating feedback loop”, when children and their caregivers repeatedly mislead each other (Marvin et al., 2002). Furthermore, group facilitators encourage adults to reflect on their own developmental history and their attachments with their caregivers; support is provided to consider how this may lead to production of their own misleading messages, defensive strategies and limited responsiveness to their child (Hoffman et al., 2006).

A central facet of the intervention is a Circle of Security graphic (Image 1), which aims to conceptualise attachment theory in a cognitively and emotionally accessible way using Ainsworth et al.’s (1978) concepts of a safe haven and secure base. This is displayed constantly in the therapy room and is given in the form of a magnet for caregivers to reference at home.

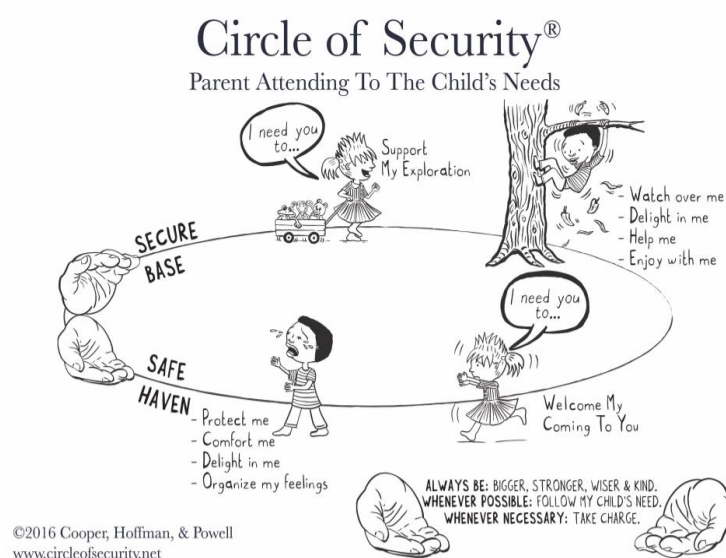


Figure 1. The full Circle of Security graphic (Cooper,

The original COS format was developed as a 20 week program consisting of weekly 75 minute sessions, however it has been adapted in several ways to meet the needs of the target group, including Circle of Security-Parenting (COS-P), Circle of Security-Home Visiting-4 (COS-HV4) and Circle of Security-Perinatal Protocol (COS-PP).

Rationale and Relevance to Educational Psychology Practice

The revision of the SEN Code of Practice in 2015 (DfE & DH, 2015) extended the statutory requirement for support to all children and young people aged 0-25. In terms of Educational Psychology practice, this entails the involvement of EPs with children at increasingly younger ages. Therefore, it is vital that an EP has a thorough knowledge of evidence-based practice for addressing a variety of needs of children in the full age range of 0-25 years, which includes the formation of a secure and sensitive caregiver-child attachment.

Furthermore, the wealth of research that states the positive outcomes for children with secure caregiver attachments suggests that EPs should be attentive to the importance of attachment and any behaviours that may be associated. Through community work, parent consultation and individual assessment, EPs are likely to encounter certain groups who exhibit signs of insecure attachments or are at a high-risk of developing one: families experiencing poverty (Bakermans-Kranenburg, van Ijzendoorn & Kroonenberg, 2004), adversity (Belsky & Fearon, 2002) or child illness (Cassibba, van Ijzendoorn & Coppola, 2011); children who are Looked After (van den Dries, Juffer, van Ijzendoorn & Bakermans-Kranenburg, 2008) or caregivers experiencing mental health difficulties (Belsky & Fearon, 2002). Therefore, a thorough knowledge of evidence-based practice is essential to ensure that the

most appropriate recommendations and support are provided for children, young people and families.

However, the majority of the current research into the effectiveness of the COS intervention is based on improving parental outcomes, such as caregiver reflective functioning (Gilbert, 2009), treatment satisfaction (Moschner, Achtergarde & Ramsauer, 2018) and emotional regulation (Horton & Murray, 2015). Thus, the topic of this review will include a critical analysis of studies that measure a child outcome.

Therefore, based on the importance of promoting secure relationships in early childhood, the increase in EPs working with younger age ranges, and the gap in the literature for a review regarding children's outcomes, my research question is:

How effective is the Circle of Security intervention in improving caregiver-child relationships?

Critical Review of the Evidence Base

Literature Search and Screening

Literature searches were conducted on the 21st December 2018 and 22nd January 2019 using PsycINFO, PubMed and Web of Science. PsycINFO was chosen due to its specific psychological focus, Web of Science was selected due to its large collection of resources, and lastly, PubMed was searched to check for any studies that had been published in medical journals. The search term "Circle of Security" was used for all database searches. Several trials

were conducted using further, more specific search terms e.g. “attachment security” and “child”. However, these narrowed down the results to an extent that many valuable and relevant articles had been removed.

The literature search produced 121 results; of these, 46 were excluded due to being duplicates. An abstract screening was conducted of the remaining 75 results, using the inclusion and exclusion criteria in Table 1 to ensure that they were appropriate and relevant to the review question. Subsequently, a further 53 studies were excluded, leaving 22 studies to be screened at full text. This final screening found 3 studies that met all the inclusion criteria and were therefore included in this review. A further two studies were found using an ancestral search that were also appropriate to be included in the review. Therefore, 5 studies were identified as suitable for inclusion in this review (Table 2); a summary of the studies is presented in Appendix B. The screening process is represented in Figure 2

Table 1 Inclusion and Exclusion Criteria.

	Reference	Inclusion Criteria	Exclusion Criteria	Rationale
Type of publication	1	Study must be in a peer-reviewed journal	Study is not in a peer-reviewed journal	Peer-reviewed journals have been carefully scrutinised and are therefore more likely to be of a high quality with few errors.
Design	2a	Study must have collected primary empirical data	Study has not collected primary empirical data	Data must have been collected first-hand by researchers in order to be systematically reviewed for effect.
	2b	Study must have collected and reported quantitative data	Study has collected and reported qualitative data	Quantitative data allows effect sizes to be calculated to review effectiveness.
	2c	Study must have collected pre and post data using a group experimental design	Study has not collected pre and post data or has not used a group experimental design	Pre and post data is essential to review effectiveness of an intervention.
Intervention	3	Study must have implemented COS in any form	Study has not used any form of COS	The topic of the review is to assess the effectiveness of this intervention.
Outcomes	4	Study must have measured a child outcome	Study has only measured parent outcomes	The focus of this review is to measure effectiveness of the intervention on child outcomes.

Table 1. Inclusion and Exclusion Criteria.

Participants	5	Participants must not have current drug/alcohol abuse difficulties	Participants have current drug/alcohol abuse difficulties	Taken from a list of caregivers who are not appropriate for COS, which is provided in the manual.
Date	6	Study must be published since 2009	Study is published before 2009	This review aims to examine the most recent research for the COS intervention.

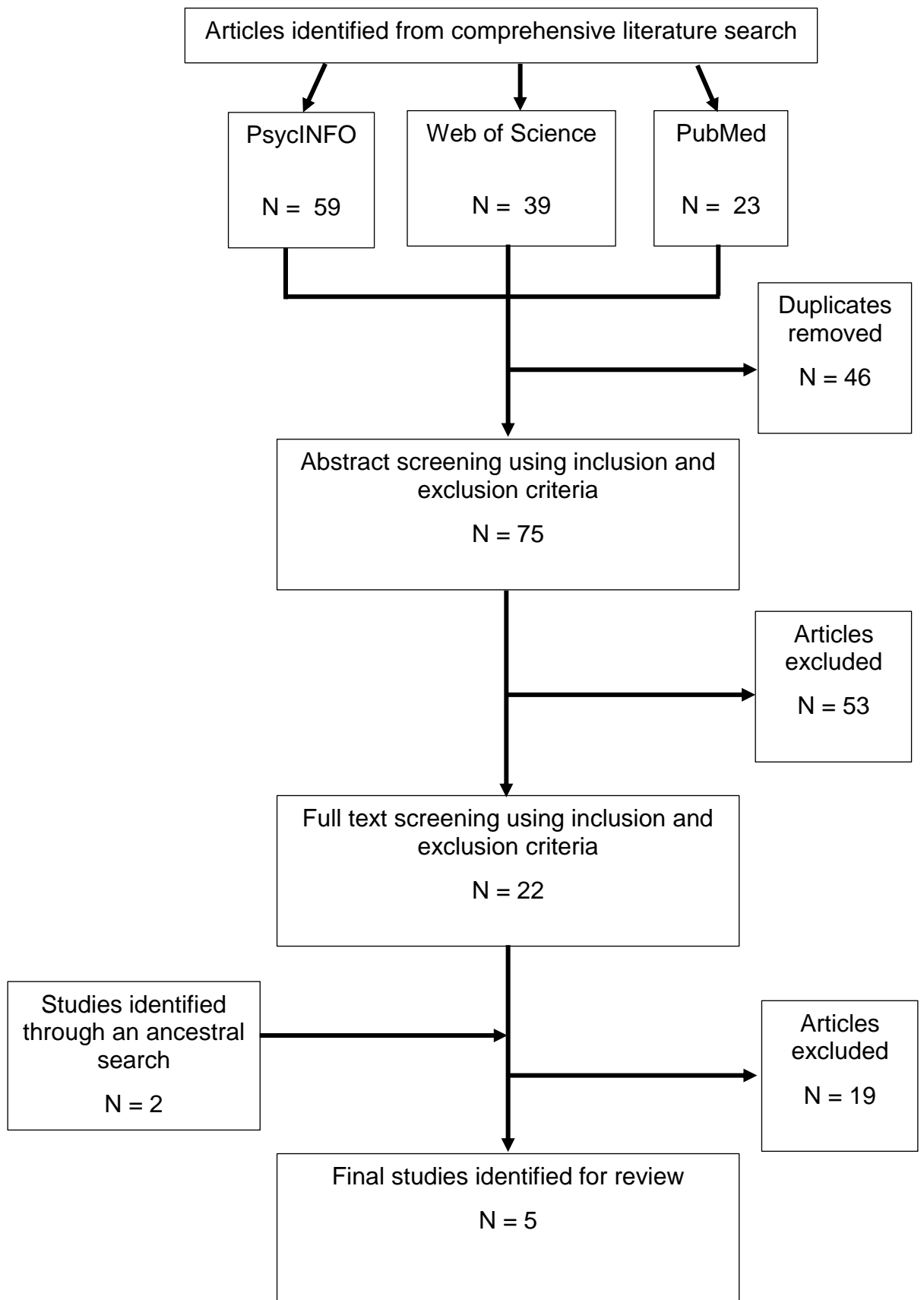


Figure 2. Flow diagram of study selection process.

Table 2. Final Studies Included in the Systematic Review.

Study ID	Study Name
1	Risholm Mothander, P., Furmark, C., & Neander, K. (2018). Adding “Circle of Security–Parenting” to treatment as usual in three Swedish infant mental health clinics. Effects on parents’ internal representations and quality of parent-infant interaction. <i>Scandinavian Journal of Psychology</i> , 59(3), 262-272.
2	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. <i>Development and Psychopathology</i> , 29(2), 651-673.
3	Huber, A., McMahon, C. A., & Sweller, N. (2015a). Efficacy of the 20-week Circle of Security intervention: Changes in caregiver reflective functioning, representations, and child attachment in an Australian clinical sample. <i>Infant Mental Health Journal</i> , 36(6), 556-574.
4	Dehghani, A., Malekpour, M., Abedi, A., & Amiri, S. (2014). The efficacy of Circle of Security on attachment and well-being in preschool children. <i>Management Science Letters</i> , 4(3), 607-612.
5	Cassidy, J., Woodhouse, S. S., Sherman, L. J., Stupica, B., & Lejuez, C. W. (2011). Enhancing infant attachment security: An examination of treatment efficacy and differential susceptibility. <i>Development and Psychopathology</i> , 23(1), 131-148.

Weight of Evidence

The final five studies were critically appraised using the Weight of Evidence Framework (WoE) from Gough (2007). This requires in-depth examination of each study based on methodological quality (WoE A), methodological relevance (WoE B) and topic relevance (WoE C). Each study is scored for each of these areas, and the mean is calculated to produce an Overall Weight of Evidence (WoE D).

The WoE A of each study was critically examined using a coding protocol for group-based design from Kratochwill's (2003) American Psychological Association Task Force on Evidence-Based Interventions in School Psychology (Appendix C). Adaptations were made to ensure it was relevant to this review (see Appendix C). Although one study (Huber et al., 2015a) did not use a control group, it was decided to still use Kratochwill's (2003) coding protocol to ensure consistency of measurement across the five studies. The optional coding for Quasi-experimental design was selected to reflect this difference.

WoE B and C were assessed using a checklist specific to the review question and intervention being examined. WoE B considered Petticrew and Roberts (2003) evidence hierarchy, but also examined other factors that could have affected internal validity, due to four of the included studies being randomised controlled trials.

A description of each WoE procedure, including criteria examined and individual scores for each test is presented in Appendices E, F and G. The overall effectiveness of each study (WoE D) is displayed in Table 3. Each score has been labelled with a descriptor of Low (1.4 or below), Medium (1.5 to 2.4) or High (2.5 or above) to represent the overall weighting.

Table 3. Weight of Evidence Ratings

Studies	WoE A – Methodological Quality	WoE B – Methodological Relevance	WoE C – Relevance of evidence to review question	WoE D – Overall Weighting
Risholm Mothander et al. (2018)	2 (Medium)	2.7 (High)	2.7 (High)	2.5 (High)
Cassidy et al. (2017)	2 (Medium)	2.3 (Medium)	2.3 (Medium)	2.2 (Medium)
Huber et al. (2015a)	1.25 (Low)	1.7 (Medium)	2.7 (High)	1.9 (Medium)
Dehghani et al. (2014)	1.5 (Medium)	2.7 (High)	1 (Low)	1.7 (Medium)
Cassidy et al. (2011)	1.5 (Medium)	3 (High)	2.7 (High)	2.4 (Medium)

Design

Of the five studies, four were randomised controlled trials (Risholm Mothander et al., 2018; Cassidy et al., 2017; Dehghani et al., 2014; Cassidy et al., 2011), therefore participants were randomly assigned to treatment or control groups. As noted by Petticrew and Roberts (2003), randomised controlled trials are considered to be a highly appropriate method of assessing effectiveness; this is reflected in the high Criteria A scores for all studies except Huber et al. (2015a), in the judgement of WoE B (Appendix F).

The type of control group differed between studies: Risholm Mothander et al. (2018), Dehghani et al. (2014) and Cassidy et al. (2011) employed varying types of “active” control groups, judged by Kratochwill (2003) as the most effective way of allowing direct comparisons to be made regarding the effectiveness of the intervention. On the other hand, Cassidy et al. (2017) used

a “waitlist control” which increases the possibility that extraneous factors may have affected the control group’s scores. In contrast, Huber et al. (2015a) used a quasi-experimental design without a control group therefore was unable to make any between-group comparisons; this led to a low score for both WoE A and B (Appendix E and F). All studies collected quantitative pre and post data, however only Risholm Mothander et al. (2018) and Dehghani et al. (2014) used a follow-up assessment to measure lasting effects of the intervention. Although this increases their methodological quality according to Kratochwill (2003), they could not receive the highest score of 3 as they did not conduct follow-up assessments at multiple points.

Participants

Across the five studies, the total number of participants was 543. However, sample sizes varied widely, ranging from 48 to 220, thus leading to differences in the statistical power for each study. The small sample sizes of Risholm Mothander et al. (2018) and Dehghani et al. (2014) reduce the power of their statistical analyses, therefore decreasing the chance of any statistically significant results representing a true effect. Attrition was low across all studies, which had a positive impact on their WoE A scores (Appendix E).

All participants were parents who were the primary caregiver for a child and the total sample was 99.1% female. Risholm Mothander et al. (2018) was the only study to include male caregivers, perhaps reflecting societal trends in Sweden where there has been an increase in the amount of paternity leave taken since 2003 (Försäkringskassan (Swedish Social Insurance Agency),

2018). In four of the studies, participants' ages ranged from 18-45 years; Huber et al. (2015a) did not specify the age range of their sample.

The Circle of Security was developed to target high-risk parents: this criteria was met in four out of five studies and is reflected in Criteria B scores for WoE C (Appendix G). Risholm Mothander et al. (2018) and Huber et al. (2015a) included participants who had been referred for or were already undergoing treatment for difficulties with caregiver child relationships, therefore were allocated the highest score of 3. Cassidy et al. (2011; 2017) used a sample of caregivers with socioeconomic risk factors, such as low income or economic stress, and were given a score of 2. Dehghani et al.'s (2014) sample was selected only on the basis of regular attendance at a nursery setting, therefore does not necessarily meet the target group suggested by Marvin et al. (2002) and the study therefore scored 1 for Criteria B in WoE C (Appendix G).

The children of the caregivers who took part in the five studies were aged 0-6 years; Marvin et al. (2002) developed the intervention for caregivers of children aged 1-4 years, therefore this extended age range could have affected the effectiveness of the intervention in some studies.

Measures

Caregiver-child relationship was mostly examined through measures of attachment. The Strange Situations procedure (SSP; Ainsworth & Bell, 1970) was used by three out of five studies (Cassidy et al., 2011; Cassidy et al., 2017; Huber et al., 2015a). This is a highly validated and reliable measure that has been used to assess the type of attachment between caregiver and child for several decades (Solomon & George, 2008). Dehghani et al. (2014) used an

alternative measure of attachment (Attachment Q-Set (AQS); Waters & Deane, 1985), which uses self-report methods and is well-established, validated and reliable (Solomon & George, 2008). Finally, Risholm Mothander et al. (2018) used the Emotional Availability (EA) scales (Biringen, Derscheid, Vliegen, Closson & Easterbrooks, 2014) to assess the capacity of the caregivers and children to share an emotionally healthy relationship. Research also supports the validity and reliability of this scale (Biringen et al., 2014).

Both the SSP (Ainsworth & Bell, 1970) and the EA scales (Biringen et al., 2014) use videotaped caregiver-child interactions to measure the attachment and relationship within the dyad. These videos are coded by a team of trained observers to evaluate and categorise interactions into different dimensions. Importantly, interrater reliability was established in all four studies, increasing the likelihood that the categorisation process was accurate. On the other hand, the AQS (Waters & Deane, 1985) used by Dehghani et al. uses a self-report card sorting technique; therefore relies on caregivers' self-assessments to measure the change in attachment relationships within dyads. There are various advantages and disadvantages to self-report as opposed to observational techniques, however as both are well-established measures with high validity and reliability, it was not felt that this had any substantial impact on their WoE A, B or C.

Intervention

Three forms of the COS intervention were utilised by the five studies; standard COS, COS-P and COS-HV4. These vary in length from four sessions (COS-HV4) to twenty sessions (COS). In all studies except Dehghani et al. (2014), explicit and detailed descriptions were made regarding attempts at ensuring

fidelity within the intervention. Intervention fidelity was assessed in both WoE A and C, as it has important consequences for both methodological quality and the topic relevance of a study.

All implementers of the COS intervention, except for those in Dehghani et al. (2014) were trained and provided with a manual and/or materials to use throughout the sessions. In Cassidy et al. (2011; 2017) and Huber et al.'s (2015a) studies, implementers also received ongoing supervision throughout the program from one of the original COS developers. As a result, these studies received the highest score of 3 for the implementation fidelity criteria in Kratochwill's coding protocol (Appendix E) and for Criteria C in WoE C (Appendix G).

Findings

The five studies reviewed showed stark contrasts between their data analyses and statistical reporting. There is a wide variation in the complexity of the analyses, the methods used and the type and amount of data reported. This led to complications when critically considering: the findings of each paper, their value to the wider field of research about COS and the extent to which they can be generalised. Three out of five studies reported effect sizes, however these were in three forms:

- Cassidy et al. (2011) did not report an effect size for their main intervention effect, due to it being non-significant. The effect size for a significant within-group moderator variable (high irritability of infant) was reported using odds ratio effect size.

- Huber et al. (2015a) also did not report an effect size for their main intervention effect due to a non-significant result. However, a within-group moderator variable, security of baseline group, was identified and a partial eta-squared effect size reported.
- Cassidy et al. (2017) reported an effect size for their main intervention effect using Cohen's d, despite this effect being non-significant. They also reported an effect size for a significant between-groups moderating variable, maternal attachment avoidance.

For the purposes of comparison, Cassidy et al. (2011) and Huber et al.'s (2015a) effect sizes were converted to Cohen's d using an online tool created by DeCoster (2012). A further Cohen's d effect size was calculated for Dehghani et al. (2014) using the data available. This was not possible for Risholm Mothander et al. (2018) due to insufficient information provided. A summary of main findings is presented in Table 4.

Dehghani et al. (2014) and Risholm Mothander et al. (2018) were the only two studies that found a significant main effect of the COS intervention on outcomes related to caregiver-child relationship. However, Risholm Mothander et al. (2018) found this was a within-group effect: there was no significant difference between the COS intervention and treatment as usual (TAU) group.

The remaining three studies found the overall effect of COS on caregiver-child relationship was non-significant. However, upon closer scrutiny of moderating variables, some interaction effects were detected, as displayed in Table 4. Cassidy et al. (2011) and Huber et al. (2015a) both identified child variables that moderated the relationship between COS and attachment security. Huber

et al. (2015a) found that although the overall classifications of attachment security did not show a significant increase following COS, children rated as “insecure” showed significant increases in attachment security with a large effect size ($d = 1.57$). Furthermore, in Cassidy et al.’s (2011) study, infants rated as more irritable were found to have increased improvements following COS than their control group peers ($d = 0.87$; large effect size). On the other hand, maternal attachment avoidance was identified by Cassidy et al. (2017) as an interacting variable; children whose mothers scored highly on attachment avoidance were found to have increased attachment security following intervention ($d = 0.41$; medium effect size) than control group children.

All five studies scored a medium or high score on the overall WoE D, suggesting that the results are appropriate to answer the review question. However, there are methodological issues within some of the papers, which have important implications for their findings. Firstly, as stated in Cassidy et al. (2017), there was no control for Type 1 error, despite a large number of statistical analyses being conducted. Furthermore, the authors state that there was not enough power to examine moderating variables, therefore the findings should be interpreted with caution. In addition, the two studies that identified a main effect of the COS intervention (Risholm Mothander et al., 2018, Dehghani et al., 2014) had small sample sizes that reduced their statistical power. Therefore, there is an increased probability that any significant results identified may have occurred due to chance or may not represent a true effect. Furthermore, Dehghani et al. (2014) achieved the lowest score for WoE D, which suggests their results may not be as reliable as the other four studies.

Table 4. Summary of Main Findings

Study	Participants	Outcome variable	Intervention effect		Moderators of Intervention Effect	Overall WoE D
			<i>d</i>	<i>p</i>		
Risholm Mothander et al. (2018)	52	Emotional Availability	n/a	.007	Moderating variables not examined	2.5
Cassidy et al. (2017)	164	Attachment security	0.01	.97	Maternal attachment avoidance (<i>d</i> = 0.41, <i>p</i> = .02)	2.2
Huber et al. (2015)	83	Attachment security	n/a	.61	Security of baseline group (<i>d</i> = 1.57, <i>p</i> < .001)	1.9
Dehghani et al. (2014)	48	Attachment security	0.98	.00	Moderating variables not examined	1.7
Cassidy et al. (2011)	220	Attachment security	n/a	>.05	High irritability of infant (<i>d</i> = 0.87, <i>p</i> < .05)	2.4

Notes: Cohen (1988) suggests that a small effect size is $d \geq 0.2$, a medium effect size is ≥ 0.5 , and a large effect size is ≥ 0.8 .

Conclusion and Recommendations

The COS intervention is an established program that has been the topic of many peer-reviewed articles, although many of which focus only on parent outcomes. Therefore, this review critically considers five studies that examine whether the COS intervention is effective in improving child-caregiver relationships.

Based on the findings, this review provides limited evidence as to the effectiveness of COS for improving child outcomes. Of the two studies that found a significant main effect, only one was able to establish this difference between the intervention and control group (Dehghani et al., 2014). Although Risholm Mothander et al. (2018) found a significant within group effect for COS, they did not detect a significant effect between the COS and TAU group, despite the TAU group intervention showing a non-significant within-group effect. Furthermore, the remaining three studies showed that COS intervention did not have a significant effect alone; only when controlling for other variables were significant results detected.

It is also important to consider the methodological implications of the research that has been reviewed. Huber et al. (2015a) did not employ a control group, which reduced the ability to make direct comparisons regarding the effect of COS. Furthermore, the only study that found a between-group main effect of the COS intervention, Dehghani et al. (2014), was the one to use a self-report measure to assess attachment security. The contrast between the findings of this paper, and the others which used observational methods, poses the question as to whether self-report was a more or less accurate and valid

measure of attachment security. Moreover, previous research has debated how well the outcomes from the SSP and the AQS correlate (Fairchild, 2006).

Overall, it can be concluded that although there is some research to support the effectiveness of COS for improving caregiver-child relationship, it is important to consider other variables before recommending the intervention.

Studies from Cassidy et al. (2011; 2017) and Huber et al. (2015a) all suggest that there are a range of other factors that may influence the effectiveness of the results, and that it may be more appropriate for individuals with a higher level of established difficulties or risk factors. This is in keeping with the target group established by Marvin et al. (2002) when the intervention was designed.

When considering the results of this review, careful consideration should be made as to the wide variation between the five studies examined. There are substantial differences between the location of research, intervention setting, type of COS program used, sample size and methods of analysis. For example, the research is conducted in four different countries, only three of which are OECD and regardless of this, are not culturally or economically identical to the U.K. Furthermore, Dehghani et al. (2014) used a sample of 48 participants, whereas Cassidy et al. (2011) studied 220. Childcare centres and nurseries are used by two studies, mental health centres are used by another two, and the final is conducted within participants' homes. Therefore, although this review can be used as a valuable source of information regarding the current research, there are some implications of these differences regarding generalisability.

It is recommended that individuals who are contemplating the use of COS reflect carefully on the demographic, socioeconomic and personal factors of their participants. The research by Cassidy et al. (2011; 2017) and Huber et al. (2015a) suggest that this intervention may be more effective with individuals who have more significant needs e.g. mothers with attachment avoidance, highly irritable infants or those with insecure attachments. It should also be considered whether the standard 20 week program is the most appropriate, or the shorter 8 week COS-P version; this may depend on both cost/resources and the availability or capacity of participants.

Further research could be conducted to explore the moderating effects detected by three out of the five studies included in this review. It appears that the pathway to developing secure attachment through intervention is not straightforward and is affected by a range of variables.

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Appendices

Appendix A – Studies Excluded at Full Text Screening

Excluded Study	Rationale for Exclusion
Andrews, E., & Coyne, J. (2018). Travelling the circle together, solo: An individual protocol for the Circle of Security intensive intervention. <i>Journal of Clinical Psychology</i> .	Exclusion criteria: 2b
Cassidy, J., Ziv, Y., Stupica, B., Sherman, L. J., Butler, H., Karfgin, A., ... Powell, B. (2010). Enhancing attachment security in the infants of women in a jail-diversion program. <i>Special Issue: An Attachment Perspective on Incarcerated Parents and Their Children</i> , 12(4), 333–353.	Exclusion criteria: 5
Fardoulys, C., & Coyne, J. (2016). Circle of security intervention for parents of children with autism spectrum disorder. <i>Australian and New Zealand Journal of Family Therapy</i> , 37(4), 572-584.	Exclusion criteria: 2c
Gilbert, J. L. (2009). Reflective functioning and caregiver behavior: Development of Caregiver Reflective Functioning Scales (CRFS) for use with the Circle of Security Intervention (COSI). <i>Dissertation Abstracts International: Section B: The Sciences and Engineering</i> , 69(7–B), 4420.	Exclusion criteria: 4
Hanlon-Dearman, A., Malik, S., Wellwood, J., Johnston, K., Gammon, H., Andrew, K. N., ... Longstaffe, S. (2017). A descriptive study of a community-based home-visiting program with preschool children prenatally exposed to alcohol. <i>Journal of Population Therapeutics and Clinical Pharmacology</i> , 24(2), e61–e71.	Exclusion criteria: 2b
Horton, E., & Murray, C. (2015). A quantitative exploratory evaluation of the Circle of Security-Parenting Program with mothers in residential substance-abuse treatment. <i>Infant Mental Health Journal</i> , 36(3), 320-336.	Exclusion criteria: 4
Huber, A., McMahon, C., & Sweller, N. (2015b). Improved child behavioural and emotional functioning after Circle of Security 20-week	This study uses the same participants and design as Huber, McMahon & Sweller

intervention. <i>Attachment & Human Development</i> , 17(6), 547-569.	(2015a) therefore it was not appropriate to systematically review it twice.
Kim, M., Woodhouse, S. S., & Dai, C. (2018). Learning to provide children with a secure base and a safe haven: The Circle of Security-Parenting (COS-P) group intervention. <i>Journal of Clinical psychology</i> .	Exclusion criteria: 2c
Lee, L., Griffiths, C., Glossop, P., & Eapen, V. (2010). The Boomerangs Parenting Program for Aboriginal parents and their young children. <i>Australasian Psychiatry</i> , 18(6), 527–533.	Exclusion criteria: 3
Mercer, J. (2015). Examining Circle of Security™: A review of research and theory. <i>Research on Social Work Practice</i> , 25(3), 382-392.	Exclusion criteria: 2a
Moschner, S. L., Achtergarde, S., & Ramsauer, B. (2018). Treatment Satisfaction of Mothers with Postpartum Depression Concerning Circle of Security Intervention. <i>Praxis der Kinderpsychologie und Kinderpsychiatrie</i> , 67(4), 351-366.	Exclusion criteria: 4
Page, T. F., & Cain, D. S. (2009). “Why don’t you just tell me how you feel?”: A case study of a young mother in an attachment-based group intervention. <i>Special Issue: Attachment Theory and Its Application to Practice.</i> , 26(4), 333–350.	Exclusion criteria: 2c
Page, T., & Koren-Karie, N. (2013). Evidence of attachment disorganization and growth in one mother’s descriptions of her son: A case study. <i>Journal of Infant, Child & Adolescent Psychotherapy</i> , 12(2), 100–117.	Exclusion criteria: 2c
Pazzagli, C., Laghezza, L., Manaresi, F., Mazzeschi, C., & Powell, B. (2014). The circle of security parenting and parental conflict: a single case study. <i>Frontiers in Psychology</i> , 5, 887.	Exclusion criteria: 2c
Ramsauer, B., Lotzin, A., Mühlhan, C., Romer, G., Nolte, T., Fonagy, P., & Powell, B. (2014). A randomized controlled trial comparing Circle of Security Intervention and treatment as usual as interventions to increase attachment security in infants of mentally ill mothers: Study Protocol. <i>BMC Psychiatry</i> , 14(1), 24.	Exclusion criteria: 2a (Study protocol)
Rostad, W. L. (2015). Examining the effectiveness of the circle of security parenting DVD	Exclusion criteria: 1

<p>program. <i>Dissertation Abstracts International: Section B: The Sciences and Engineering</i>, 75(10-BE)).</p>	
<p>Steele, M., Steele, H., Bate, J., Knafo, H., Kinsey, M., Bonuck, K., ... & Murphy, A. (2014). Looking from the outside in: the use of video in attachment-based Interventions. Corrigendum. <i>Attachment & Human Development</i>, 16(6).</p>	Exclusion criteria: 2a
<p>Væver, M. S., Smith-Nielsen, J., & Lange, T. (2016). Copenhagen infant mental health project: study protocol for a randomized controlled trial comparing circle of security–parenting and care as usual as interventions targeting infant mental health risks. <i>BMC Psychology</i>, 4(1), 57.</p>	Exclusion criteria: 2a (Study protocol)
<p>Yaholkoski, A., Hurl, K., & Theule, J. (2016). Efficacy of the Circle of Security intervention: A meta-analysis. <i>Journal of Infant, Child, and Adolescent Psychotherapy</i>, 15(2), 95-103.</p>	Exclusion criteria: 2a

Appendix B – Summary of Included Studies

Study	Study Design	Study Location	Sample	COS Format	Caregiver-child relationship measure	Key Findings
Risholm Mothander, Furmark & Neander (2018)	Randomised controlled trial	Sweden	N = 52 47 female 5 male Age range = 18-44 years	COS-P Group format 8 sessions	Caregiver-child interaction: <i>Emotional Availability (EA) scales</i>	<ul style="list-style-type: none"> • Significant change in emotionally available interactions within COS-P group. • Not significant within TAU group or between COS-P and TAU.
Cassidy, Brett, Gross, Stern, Martin, Mohr & Woodhouse (2017)	Randomised controlled trial	USA	N = 164 164 female Age range = 18-44 years	COS-P Group format 10 sessions	Parent-child attachment: <i>Strange Situations Procedure (SSP). Videos coded using and Preschool Attachment Classification System (PACS).</i>	<ul style="list-style-type: none"> • No Main effects of intervention on attachment. • Children whose mothers showed higher levels of attachment avoidance had greater increases in security following intervention.
Huber, McMahon & Sweller (2015)	Non-randomised quasi-experimental design	Australia	N = 83 75 female	COS Group format 20 sessions	Parent-child attachment: <i>Strange Situations Procedure (SSP). Videos coded using</i>	<ul style="list-style-type: none"> • No significant change in attachment classification • Significant increase in security for dyads classified as “insecure”

					<i>Ainsworth Coding System for infants under 24 months, and Preschool Attachment Classification System (PACS) for children between 24-48 months</i>	
Dehgani, Malekpour, Abedi & Amiri, 2014	Randomised controlled trial	Iran	N = 48 48 female Age range = 20-45 years	COS Group 20 sessions	Children's attachment security: <i>Attachment Q-set</i>	<ul style="list-style-type: none"> • Mean scores of attachment were significantly greater in the experimental group at both post-test and follow up.
Cassidy, Woodhouse, Sherman, Stupica & Lejuez, 2011	Randomised controlled trial.	USA	N = 220 220 female Age range = 18-39 years	COS-HV4 Individual 4 home visits	Parent-child attachment: <i>Strange Situation Procedure</i>	<ul style="list-style-type: none"> • No main effect of treatment. • Highly irritable infants with more secure mothers showed improvements in attachment following intervention

Appendix C – Rationale for Adaptations Made to Coding Protocol

Table 1. Sections removed from Kratochwill's (2003) coding protocol

Eliminations	Rationale
<p><i>Section I. General Characteristics</i> B7. Coding B8. Interactive process followed</p>	This review does not examine any qualitative data
<p><i>Section II. Key Features for Coding Studies and Rating Level of Evidence/Support</i> C. Primary/Secondary Outcomes Are Statistically Significant D. Educational/Clinical Significance E. Identifiable Components G. Replication H. Site of Implementation</p>	<p>This review analyses the primary outcomes of the studies in the Measures section and in WoE B</p> <p>This is reviewed using the WoE framework and discussed at length during the report</p> <p>This relates to C, which has not been included in this version of the protocol.</p> <p>This was not relevant to any of the studies included in the review</p> <p>This information is analysed in the Conclusion and Recommendations section</p>
<p><i>Section III. Other Descriptive or Supplemental Criteria to Consider</i> A2. Participant Characteristics Specified for Treatment and Control Group A4. Receptivity/acceptance by target participant population (treatment group) A5.2 Generalisation across settings D. Dosage response</p>	<p>This information is detailed in Appendix B (Summary of Included Studies)</p> <p>This review examined quantitative data; there is no qualitative information available regarding participants opinions about treatment.</p> <p>This review investigated caregiver-child relationships, which are not specific to a certain setting.</p> <p>This was not relevant to any of the studies included in the review</p>

Appendix D – Coding Protocols

Coding Protocol for Risholm Mothander et al.. (2018)

[Adapted from the Procedural Manual of the Task Force on Evidence-Based Interventions in School Psychology, American Psychology Association, Kratochwill, T.R. (2003)]

Coding Protocol

Domain:

- School- and community-based intervention programs for social and behavioral problems
- Academic intervention programs
- Family and parent intervention programs
- School-wide and classroom-based programs
- Comprehensive and coordinated school health services

Name of Coder:

Date: 25.01.19

Full Study Reference in proper format:

Risholm Mothander, P., Furmark, C., & Pia, N. (2018). Adding “Circle of Security-Parenting” to treatment as usual in three Swedish infant mental health clinics. Effects on parents’ internal representations and quality of parent-infant interaction. *Scandinavian Journal of Psychology*, 59(3), 262-272. <https://doi.org/http://dx.doi.org/10.1111/sjop.12419>.

Intervention name: (description of study): Circle of Security-Parenting

Study ID number: 1

Type of Publication:

- Book/Monograph
- Journal Article
- Book Chapter
- Other (specify):

I. General Characteristics

A. General Design Characteristics

A1. Random assignment designs (if random assignment design, select one of the following)

- Completely randomized design
- Randomized block design (between participants, e.g., matched classrooms)
- Randomized block design (within participants)
- Randomized hierarchical design (nested treatments)

A2. Nonrandomized designs (if non-random assignment design, select one of the following)

- Nonrandomized design
- Nonrandomized block design (between participants)
- Nonrandomized block design (within participants)
- Nonrandomized hierarchical design
- Optional coding for Quasi-experimental designs

A3. Overall confidence of judgment on how participants were assigned (select one of the following)

- Very low (little basis)
- Low (guess)
- Moderate (weak inference)
- High (strong inference)
- Very high (explicitly stated)
- N/A
- Unknown/unable to code

B. Statistical Treatment/Data Analysis (answer B1 through B6)

	Yes	No	N/A
B1. Appropriate unit of analysis	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
B2. Familywise error rate controlled	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
B3. Sufficiently large N	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

Statistical Test: Wilcoxon Signed Ranks

level: 0.05

ES: 0.5

N required: 85

Total size of sample (start of study): 52
N

Intervention group sample size: 28
N

Control group sample size: 24
N

C. Type of Program

- Universal prevention program
- Selective prevention program
- Targeted prevention program
- Intervention/Treatment
- Unknown

D. Stage of Program (select one)

- Model/demonstration programs
- Early stage programs
- Established/institutionalized programs
- Unknown

E. Concurrent or Historical Intervention Exposure (select one)

- Current exposure
- Prior exposure
- Unknown

II. Key Features for Coding Studies and Rating Level of Evidence/Support

(Rating Scale: 3= Strong Evidence, 2=Promising Evidence, 1=Weak Evidence, 0=No Evidence)

A. Measurement (answer A1 through A4)

A1. Use of outcome measures that produce reliable scores for the majority of primary outcomes. The table for Primary/Secondary Outcomes Statistically Significant allows for listing separate outcomes and will facilitate decision making regarding measurement (select one of the following)

- Yes
- No
- Unknown/unable to code

A2 Multi-method (select one of the following)

- Yes
- No
- N/A
- Unknown/unable to code

A3 Multi-source (select one of the following.)

- Yes
 No
 N/A
 Unknown/unable to code

A4 Validity of measures reported (select one of the following)

- Yes validated with specific target group
 In part, validated for general population only
 No
 Unknown/unable to code

Rating for measurement (select 0, 1, 2 or 3) 3 2 1 0

B. Comparison Group

B1 Type of Comparison Group (Select one of the following)

- Typical contact
 Attention placebo
 Intervention element placebo
 Alternative intervention
 Pharmacotherapy
 No intervention
 Wait list/delayed intervention
 Minimal contact
 Unable to identify type of comparison

B2 Overall confidence of judgment on type of comparison group

- Very low (little basis)
 Low (guess)
 Moderate (weak inference)
 High (strong inference)
 Very high (explicitly stated)
 Unable to identify comparison group

B3 Counterbalancing of change agent

- By change agent
 Statistical (analyse includes a test for intervention)
 Other
 Not reported/None

B4 Group equivalence established (select one of the following)

- Random assignment
- Posthoc matched set
- Statistical matching
- Post hoc test for group equivalence

B5 Equivalent mortality

- Low attrition (less than 20 % for post)
- Low attrition (less than 30% for follow-up)
- Intent to intervene analysis carried out?

Findings _____

Overall rating for Comparison group (select 0, 1, 2 or 3) 3 2 1 0

F. Implementation Fidelity

F1. Evidence of Acceptable Adherence

- Ongoing supervision/consultation
- Coding intervention sessions/lessons or procedures
- Audio/video tape implementation
 - Entire intervention
 - Part of intervention

F2. Manualization (select all that apply)

- Written material involving a detailed account of the exact procedure and the sequence they are to be used.
- Formal training session that includes a detailed account of the exact procedures and the sequence in which they are to be used.
- Written material involving an overview of broad principles and a description of the intervention phases.
- Formal or informal training session involving an overview of broad principles and a description of the intervention phases.

Adaptation procedures are specified (select one) yes no unknown

Rating for Implementation Fidelity (select 0, 1, 2 or 3): 3 2 1 0

I. Follow Up Assessment

- Timing of follow up assessment: 12 months
- Number of participants included in the follow up assessment: 40 participants (23 treatment, 17 control)
- Consistency of assessment method used: specify: Same measures used

Rating for Follow Up Assessment (select 0, 1, 2, or 3): 3 2 1 0

III. Other Descriptive or Supplemental Criteria to Consider

A. External Validity Indicators

A1. Sampling procedures described in detail Yes No

Specify rationale for selection: Parents/caregivers with children aged 0-4 years in planned or ongoing treatment due to difficulties with the caregiver-child relationship.

Specify rationale for sample size: The participants available at the mental health facilities used at the time the study was taking place.

A1.1 Inclusion/exclusion criteria specified Yes No

A1.2 Inclusion/exclusion criteria similar to school practice Yes No

A1.3 Specified criteria related to concern Yes No

A3. Details are provided regarding variables that:

A3.1 Have differential relevance for intended outcomes Yes No

Specify: Measurements of child's mental state, emotional availability and parental relationship

A3.2 Have relevance to inclusion criteria Yes No

Specify: Measured parents/caregivers' depression, anxiety and parental stress

A5. Generalization of Effects:

A5.1 Generalization over time

A5.1.1 Evidence is provided regarding the sustainability of outcomes after intervention is terminated Yes No

Specify: Carried out a follow up at 12 months which showed improvements on all measures

A5.1.2 Procedures for maintaining outcomes are specified Yes No

Specify: _____

A5.3 Generalization across persons

Evidence is provided regarding the degree to which outcomes are manifested with participants who are different than the original group of participants for which the intervention was evaluated Yes No

Specify: _____

B. Length of Intervention (select B1 or B2)

- B1. Unknown/insufficient information provided
- B2. Information provided (if information is provided, specify one of the following:)

Weeks

Months _____

Years _____

C. Intensity/dosage of Intervention (select C1 or C2)

- C1. Unknown/insufficient information provided
- C2. Information provided (if information is provided, specify both of the following:)

C2.1 length of intervention session

C2.2 frequency of intervention session:

E. Program Implementer (select all that apply)

- E1. Research Staff
- E2. School Specialty Staff
- E3. Teachers
- E4. Educational Assistants
- E5. Parents
- E6. College Students
- E7. Peers
- E8. Other – Therapists at Infant Mental Health clinics
- E9. Unknown/insufficient information provided

F. Characteristics of the Intervener - Insufficient information provided

- F1. Highly similar to target participants on key variables (e.g., race, gender, SES)
- F2. Somewhat similar to target participants on key variable
- F3. Different from target participants on key variables

G. Intervention Style or Orientation (select all that apply)

- G1. Behavioral
- G2. Cognitive-behavioral
- G3. Experiential
- G4. Humanistic/interpersonal
- G5. Psychodynamic/insight oriented
- G6. other (specify):_____
- G7. Unknown/insufficient information provided

H. Cost Analysis Data (select H1 or H2)

- H1. Unknown/insufficient information provided
- H2. Information provided (if information is provided, answer H2.1)

H2.1 Estimated Cost of Implementation: _____

I. Training and Support Resources (select all that apply)

- I1. Simple orientation given to change agent
- I2. Training workshops conducted

of Workshops provided – Does not specify

Average length of training – 4 day course

Who conducted training (select all that apply)

- I2.1 Project Director
- I2.2 Graduate/project assistants
- I2.3 Other (please specify):
- I2.4 Unknown

- I3. Ongoing technical support
- I4. Program materials obtained
- I5. Special Facilities
- I6. Other (specify):

J. Feasibility

J1. Level of difficulty in training intervention agents (select one of the following)

- J1.1 High
- J1.2 Moderate
- J1.3 Low
- J1.4 Unknown

J2. Cost to train intervention agents (specify if known): _____

J3. Rating of cost to train intervention agents (select one of the following)

- J3.1 High
- J3.2 Mod
- J3.3 low
- J3.4 Unknown

Summary of Evidence

Indicator	Overall evidence rating 0-3 NNR = No Numerical Rating	Description of evidence: Strong, Promising, Weak, No/limited evidence, or descriptive ratings
General Characteristics		
General Design Characteristics	NNR	<ul style="list-style-type: none"> • Very high level of confidence that the design was randomly assigned
Statistical Treatment/Data Analysis	NNR	<ul style="list-style-type: none"> • Wilcoxon Signed Ranks
Type of Program	NNR	<ul style="list-style-type: none"> • Participants were already undergoing treatment
Stage of the Program	NNR	<ul style="list-style-type: none"> • Program established in 2002, has been used widely and its effectiveness has been evaluated in numerous studies ranging from 2002 to present.
Concurrent or Historical Intervention Exposure	NNR	<ul style="list-style-type: none"> • Current exposure
Key Features for Coding Studies and Rating Level of Evidence / Support		
Measurement	2	<ul style="list-style-type: none"> • Data only collected from one source: parents/carers
Comparison Group	2	<ul style="list-style-type: none"> • “Active” comparison group • Low attrition at both post and follow up
Implementation Fidelity	2	<ul style="list-style-type: none"> • Formal training and written manual provided but no ongoing supervision.
Follow-up Assessment	2	<ul style="list-style-type: none"> • Only conducted at one interval
Other Descriptive or Supplemental Criteria to Consider		
External Validity Indicators	NNR	<ul style="list-style-type: none"> • Sampling and inclusion criteria specified
Length of Intervention	NNR	<ul style="list-style-type: none"> • Insufficient information
Intensity/Dosage of Intervention	NNR	<ul style="list-style-type: none"> • Insufficient information
Program Implementer	NNR	<ul style="list-style-type: none"> • Therapists at Infant Mental Health clinics
Characteristics of the Intervener	NNR	<ul style="list-style-type: none"> • Insufficient information
Intervention Style or Orientation	NNR	<ul style="list-style-type: none"> • Cognitive-behavioural
Cost Analysis Data	NNR	<ul style="list-style-type: none"> • Unknown
Training and Support Resources	NNR	<ul style="list-style-type: none"> • Therapists attended a 4 day training course
Feasibility	NNR	<ul style="list-style-type: none"> • Unknown

Appendix E – Weight of Evidence A

Weight of Evidence A judges the methodological quality of each study. A coding protocol from Kratochwill's (2003) American Psychological Association Task Force on Evidence-Based Interventions in School Psychology was used to assess and provide critical judgements on the design of each study. Some adaptations were made to the coding protocol in order to ensure it was relevant to this review, therefore each study was critically considered regarding its measurement, comparison group, intervention fidelity and follow-up measures. The average of these scores was taken to give an overall weighting for Weight of Evidence A.

These are the criteria used for each weighting. An average was then taken as overall Weight of Evidence A.

Table 1. Measurement Criteria

Weighting	Score	Criteria
Strong	3	<ul style="list-style-type: none">- Measures should have a reliability coefficient of .85 or higher- Data collected using multiple methods- Data collected from multiple sources when appropriate
Promising	2	<ul style="list-style-type: none">- A case is presented for the measures used- At least 75% of the primary outcome measures should have a reliability coefficient of at least .70- Data collected using multiple methods and/or multiple sources when appropriate
Weak	1	<ul style="list-style-type: none">- No case for validity required- At least 50% of the measures should have a reliability coefficient of .50 or above
No/Limited Evidence	0	<ul style="list-style-type: none">- No case for validity required- Measures with low reliability (reliability coefficient of less than .50)

Table 2. Comparison Group Criteria

Weighting	Score	Criteria
Strong	3	<ul style="list-style-type: none"> - At least one type of “active” comparison group needs to be used - Evidence of established group equivalency e.g. randomised assignment. - Evidence of counterbalancing of change agents - Less than 20% attrition at post - If applicable, less than 30% attrition at follow-up
Promising	2	<ul style="list-style-type: none"> - Control group should be a “no intervention group” - Two of the following must be met: change agents counterbalanced, established group equivalence, equivalent mortality with low attrition. - An intent-to-intervene analysis in the absence of equivalent mortality
Weak	1	<ul style="list-style-type: none"> - Presence of a comparison group - At least one of the following must be met: change agents counterbalanced, established group equivalence, equivalent mortality with low attrition. - An intent-to-intervene analysis in the absence of equivalent mortality
No/Limited Evidence	0	<ul style="list-style-type: none"> - No evidence of attempts to establish group equivalence

Table 3. Implementation Fidelity Criteria

Weighting	Score	Criteria
Strong	3	<ul style="list-style-type: none"> - Strong evidence of acceptable adherence - Two of the following must be met: ongoing supervision/consultation, audio/video tapes, coding sessions - Evidence of the use of a manual: this should either be in the form of detailed written materials or a detailed formal training session - Description of procedures for adaptation (if applicable)
Promising	2	<ul style="list-style-type: none"> - Evidence of acceptable adherence - Use of either ongoing supervision/consultation, audio/video tapes, coding sessions - Evidence of the use of a manual: this should either be in the form of written materials

Weak	1	-	giving a broad overview or a detailed formal or informal training session Either the use of either ongoing supervision/consultation, audio/video tapes, coding sessions or use of a manual.
No/Limited Evidence	0	-	No attempts at establishing intervention fidelity

Table 4. Follow-up Assessment Criteria

Weighting	Score	Criteria
Strong	3	- Follow-up assessments conducted at multiple time points - All participants from the original sample must be included
Promising	2	- Similar measures used as the pre/post test - Follow-up assessment completed on at least one occasion - Majority of the participants from the original sample.
Weak	1	- Similar measures used as the pre/post test - Follow-up assessment completed on at least one occasion - Some of the participants from the original sample.
No/Limited Evidence	0	- No follow-up assessment

Table 5. Overall Scores for Weight of Evidence A

Study	Measurement	Comparison	Implementation Fidelity	Follow-up Assessment	Overall WoE A
Risholm Mothander et al. (2018)	2	2	2	2	2
Cassidy et al. (2017)	3	2	3	0	2
Huber et al. (2015a)	2	0	3	0	1.25
Dehghani et al. (2014)	2	2	0	2	1.5
Cassidy et al. (2011)	2	2	2	0	1.5

Appendix F – Weight of Evidence B

Weight of Evidence B assesses the methodological relevance of each study and subsequently whether it is appropriate to determine whether the Circle of Security is an effective intervention for improving caregiver-child relationships. The “Study Design” criteria were created with regards to Petticrew and Roberts (2003), which discusses the most appropriate design for studying effectiveness. As four of the studies used in this review are randomised controlled trials, the further criteria were created to consider any additional factors within each study’s design, which may pose any threats to internal validity.

Table 1. Criteria for Weight of Evidence B

Criteria	Score	Weighting
A Study Design	3	- Randomised control studies
	2	- Quasi-experimental designs and cohort studies
	1	- Qualitative research, non-experimental evaluations and case-control studies
B Measures	3	- Use of pre and post measures
		- Follow-up assessment conducted
		- Use of multiple methods
	2	- Assessment data obtained from multiple sources
		- Use of pre and post data
		- No follow up assessment conducted
1	- Use of multiple methods	
	- Assessment data obtained from a single source	
	- Use of pre and post data	
C Comparison	3	- No follow up assessment conducted
		- Single method of assessment
	2	- Assessment data obtained from a single source
		- Presence of an “active” control group
		- Participants randomised into intervention or control group
1	- Presence of a control group that is not “active”	
	- Participants randomised into intervention or control group	
	1	No control group used

Table 2. Scores for Weight of Evidence B

Study	Criteria A	Criteria B	Criteria C	Overall WoE B
Risholm Mothander et al. (2018)	3	2	3	2.7
Cassidy et al. (2017)	3	2	2	2.3
Huber et al. (2015a)	2	1	1	1.7
Dehghani et al. (2014)	3	2	3	2.7
Cassidy et al. (2011)	3	2	3	3

Appendix G – Weight of Evidence C

Weight of Evidence C assesses the relevance of the evidence provided by each study to the review question. Therefore, this considers whether each study provides appropriate information that can be used to determine whether the Circle of Security intervention is effective in improving caregiver-child relationships.

The relevance of the Circle of Security to Educational Psychology practice in the UK is considered in this review, therefore, for generalisability purposes, it is important to judge whether the intervention was conducted in a country that is economically similar. Marvin et al. (2002) developed the study in order to target high-risk dyads, therefore this was an important criteria to look for in each study's sample, to ensure that the intervention is being delivered with the correct target population. Finally, interventions should be more effective if delivered in line with the manualised instructions, therefore ensuring fidelity.

Table 1. Criteria for Weight of Evidence C

Criteria	Score	Weighting
A Location	3	- Conducted in the UK
	2	- Conducted in an OECD country
	1	- Conducted in a non-OECD country
B Participants	3	- Participants with identified needs that require intervention e.g. parenting difficulties, mental health needs
	2	- Presence of risk factors in participants e.g. low socioeconomic status, infant temperament
	1	- Participants with no known difficulties or risk factors
C Fidelity	3	- Strong evidence that fidelity was maintained throughout the intervention
	2	- Promising evidence of fidelity to intervention procedure
	1	- No evidence of intervention fidelity

Table 2. Scores for Weight of Evidence C

Study	Criteria A	Criteria B	Criteria C	Overall WoE C
Risholm Mothander et al. (2018)	2	3	2	2.7
Cassidy et al. (2017)	2	2	3	2.3
Huber et al. (2015a)	2	3	3	2.7
Dehghani et al. (2014)	1	1	1	1
Cassidy et al. (2011)	2	2	3	2.7