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The Influence of Maternal Reflective Functioning and Expressed Emotion on Children's Attachment among Children with or at Risk of Behavioural Problems

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RESEARCH PAPER COVER SHEET

The influence of maternal reflective functioning and expressed emotion on children's attachment among children with or at risk of behavioural problems

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(This research project is formatted according to the nominated journal, Child and Adolescent Mental Health. Instructions to authors are included in Appendix B.)

Abstract

Background: This study examined whether levels of parental reflective function (RF), parental expressed emotion (EE) and children's attachment styles are significantly related in a sample of children with high levels of conduct disorder (CD) symptoms.

Method: The sample (n = 143) consisted of children aged 5-7 years at risk of behaviour problems. Participants were recruited from a borough of London and a unitary authority in the south west of England. Data for the three main variables and confounders were collected using semi-structured interview, direct observation and questionnaires from both parents and children. The Parent Development Interview (PDI) was used to assess RF; the Five-Minute Speech Sample to assess EE and the Manchester Child Attachment Story Task (MCAST) to assess child attachment.

Results: Global levels of maternal RF did not significantly differ between the securely and insecurely attached groups of children. Mothers of securely attached children, however, had higher RF ratings on the negative interactions and anger

subscales of the PDI compared to mothers of insecurely attached children. No significant difference was found in parental EE between secure and insecurely attached children. High EE-warmth was associated with high global RF, but there was no significant relationship between EE-criticism and RF. Multiple logistic regression found no significant relationships between parental RF, parental EE and child attachment.

Conclusions: These findings may suggest that attachment classification influences the levels of maternal RF in specific negative situations. Conversely it is possible that high maternal RF in such situations enables mothers to respond more sensitively to their child, leading to more secure attachment. The finding that maternal RF and EE were not associated with child attachment may suggest these variables are not strongly related, the sample is too small to detect any effect or that the specific sample lacks variability in scores. To the author's knowledge this is the first study to test for these relationships with confounders included in the model, which may explain the null findings.

Keywords: Reflective function*; expressed emotion; attachment; conduct disorder

Introduction

Children who exhibit early-onset behavioural problems are at high risk of subsequent conduct disorder (CD) (Olson & Hoza, 1993). Several interacting risk factors are associated with externalizing disorders, which include biological vulnerabilities and home environments, such as the quality of parenting (Hill, 2002). These risk factors are in turn associated with deficiencies in developmental processes (Guttman-Steinmetz & Crowell, 2006). In particular, insecure attachment in children has been linked to a risk for disruptive behaviours (Speltz, DeKlyen & Greenberg, 1999). Attachment is conceptualised as an emotional bond between an individual and an attachment figure (usually a caregiver), and is characterised by specific behaviours in children, such as seeking proximity with the attachment figure when distressed (Bowlby, 1969). Factors that influence childhood attachment are possible targets for interventions that seek to optimize socio-emotional development and reduce disruptive behaviour.

The concept of reflective functioning (RF), sometimes termed mentalisation, was developed by Fonagy, Steele, Moran, Steele, & Higgitt (1991) and refers to the general ability to understand one's own and others' behaviour in terms of underlying mental states and intentions. Maternal RF has been linked to both adult and infant attachment (Slade, Grienenberger, Bernbach, Levy & Locker, 2005), but research addressing this relatively new construct is limited. Expressed emotion (EE) provides a marker of negative parental attitudes and behaviour towards their children and is composed of negative affectivity (criticism and over-involvement) and positive affectivity (warmth) (Sonuga-Barke et al., 2008). High levels of parental negative EE have also been linked to disorganised child attachment (Jacobsen, Hibbs & Ziegenhain, 2000). The introduction will discuss attachment research leading to the

development of the RF construct, maternal RF and attachment research and recent research investigating EE and attachment.

Attachment theory posits that infants (between 6 and 9 months) are biologically predisposed to form emotional bonds to available caregivers (Bowlby, 1969). Attachment models are quite stable, allowing the individual to habituate to their social worlds (Main, Kaplan & Cassidy, 1985). Mothers who are able to process information about their childhood experiences with attachment figures are more likely to be sensitive to their children's needs and have securely attached children (Jacobsen, Hibbs & Ziegenhain, 2000). Mothers with secure attachment respond to their children's needs for comfort and proximity in a sensitive fashion, whereas those with insecure attachment may reject, overwhelm, or fail to regulate their children's need for proximity (Slade et al.,2005). Van Ijzendoorn's (1995) meta-analysis examined parental attachment, parental responsivity and infant attachment and reported that a small proportion (23%) of the relationship between infant and adult attachment classification is accounted for by maternal sensitivity. Therefore, research has investigated alternative mechanisms involved in the intergenerational transmission of attachment including parental mentalisation concepts, such as reflective function (RF).

Reflective function

RF is an overt manifestation of an individual's mentalising capacity, in narrative form (Slade, 2005). Fonagy, Gergely, Jurist & Target (2002) proposed the more individuals can envisage mental states in the self or other (and discriminate between the two) the more likely they are to engage in sustaining, intimate and productive relationships. Research by Fonagy et al. (1991) found that parents whose

Adult attachment interview's (AAI) were high in RF were likely themselves to be classified as secure/autonomous, and have children who were securely attached at 1 year of age. Similarly, parents low in RF were likely to be insecurely attached as were their children.

Initially, Fonagy, Target, Steele & Steele (1998) measured RF with a coding system that was developed for use with the AAI. The system assesses the quality of the subject's responses to retrospective questions about past experiences with caregivers. Recall biases and memory function could, therefore, interfere with capturing parent's true RF abilities. In contrast, Slade et al. (2005) developed a parental RF assessment that examined an individual's current attachment relationship with their child as opposed to the measurement of this concept with narratives of past attachment relationships. They extended previous observations by using their coding system with an autobiographical memory focused measure, the Parent Development Interview (PDI; Aber, Slade, Berger, Bresgi & Kaplan, 1985). They were the first to report that a mother's capacity to mentalise about her own child relates to both adult and infant attachment classifications (Slade et al., 2005). Their mediational analysis is consistent with the assumption that mothers' who are more reflective and appreciate their child as an intentional being, tend to be secure in relation to their own history and have high reflective function in their own adult attachment narratives.

There have also been several important theoretical developments concerning RF and attachment. Following their research, Slade et al. (2005) advanced a new formulation of attachment that links adult attachment classification and parental RF about the child into a single model. Grienberger, Kelly and Slade (2005) developed this formulation and proposed that mentalisation serves as a buffer against breakdowns in affect regulation during stressful situations. Mothers with high RF are

proposed to possess greater capacity to regulate the child's fear, interacting without frightening or otherwise disorganizing the baby. Slade et al. (2005) link the finding that RF can serve as a model for regulation and modulation of experience to Winnicott's (1965) concept of "good enough mothering". This idea suggests that mentalisation serves a modulating function once the mother-infant relationship has been dysregulated (Fonagy & Target, 2005). During times of high emotional intensity or stress, RF provides a model for regulating and organising functions effectively (Slade et al., 2005). The mother makes the child's inner experiences real through a mirroring process and through this process, makes a dysregulated bodily state manageable for the child (Fonagy & Target, 2005). These theoretical ideas suggest that RF may be particularly important during difficult/stressful periods in the mother-child relationship, and requires further investigation due to these implications.

Expressed emotion

The construct of expressed emotion (EE) is considered to be an important measure of the family environment (Hooley & Parker, 2006). It assesses the absence (Low EE) or presence (High EE) of a parental attitude (such as hostility, criticism and lack of warmth) towards a child (Jacobsen et al., 2000). Longitudinal studies have also found that low levels of maternal warmth predicted presence of conduct disorders (Vostanis & Nicholls, 1995). Green et al. (2007) found that ''very high'' maternal EE was associated with severe disorganisation of attachment representation in a clinical sample of 4-9 year olds diagnosed with oppositional defiant disorder (ODD) or CD. Limited research has examined the association between child attachment and maternal EE. Jacobsen et al. (2000) examined maternal EE in relation to mother-child

attachment security and reported that mothers with High EE were more prone to have children with disorganised attachment.

Research by McCarty, Lau, Valerie & Weisz (2004) found that High EE-Criticism was associated with decreased responsiveness in the parent-child relationship and maladaptive parental behaviours. In addition, High EE-Criticism has been associated with antisocial behaviour problems in children (Caspi, Moffitt, Morgan, Rutter, Taylor, Arseneault et al., 2004). Children of mothers with depression or elevated depressive symptoms have also been shown to have higher rates of insecure or disorganised attachment than children of non-depressed mothers (Toth, Rogosch, Sturge-Apple & Cicchetti, 2009). A recent study by Gravener et al. (2012) found that maternal depression was significantly positively associated with EE Self- and Child-Criticism, attachment insecurity and child internalising and externalising behaviours. Their finding that mothers' expressed criticism towards their toddlers significantly mediated the pathway between maternal depressive status and child externalising symptoms is consistent with research on older children and adolescents (Nelson et al., 2003).

In summary, research evidence suggests that there are a number of factors that influence children's attachment status, which include parental RF and EE. Limitations in the RF literature include the lack of consistency in the measures used for maternal mentalisation, which limits comparison across studies. The current study sought to add to the literature on attachment and the transmission gap by assessment of the links between childhood attachment, maternal EE and maternal RF in a group of children with high levels of conduct disorder symptoms.

Aims of the study

The aims of the study were: (i) to explore the differences between parental reflective functioning (RF) and different child attachment styles; (ii) to investigate whether there is a difference in parental expressed emotion (EE; warmth and criticism) between the child attachment categories; (iii) to investigate whether parental RF was associated with parental EE (warmth and criticism separately); and aim (iv) to investigate whether the relationship between RF, EE and attachment classification (coded secure/insecure) remained when adjusted for potential confounding variables.

It was hypothesised that: (i) mothers of securely attached children will have higher levels of RF, (ii) mothers of securely attached children will have lower levels of EE-criticism and higher levels of EE-warmth, (iii) there will be a positive correlation between levels of parental RF and EE-warmth, (iv) there will also be a negative correlation between levels of parental RF and EE-criticism and (v) parental RF and EE will be independently associated with child attachment, after adjusting for all other measured variables.

Method

The Helping Children Achieve (HCA) Trial

The HCA Trial is a randomised controlled trial, which was granted approval by the Joint South London and Maudsley and the Institute of Psychiatry Research Ethics Committee. The current secondary analysis was granted ethical approval from the University of Exeter psychology department. Participants gave full informed

consent for the data collected in the trial to be used for secondary analysis and further research (see Appendix B for the HCA consent form and letter).

Participants

Parents of children aged 5-7 years were recruited via 53 primary schools in Hackney and Plymouth. Parents completed the behaviour subscale of the Strengths and Difficulties Questionnaire (SDQ) (Goodman, 2001) and questions relating to DSM-IV criteria (American Psychiatric Association, 1994) to identify children at risk for long-term antisocial behaviour. Participants were only eligible if they scored above the cut-off for the screen (3 or above on the SDQ conduct subscale, or 5 or above on the DSM-IV scale) according to the parent or teacher report. The sample consisted of 325 parents of children aged 5-7 years (56% males). Figure 1 illustrates recruitment into HCA in relation to the current analysis.

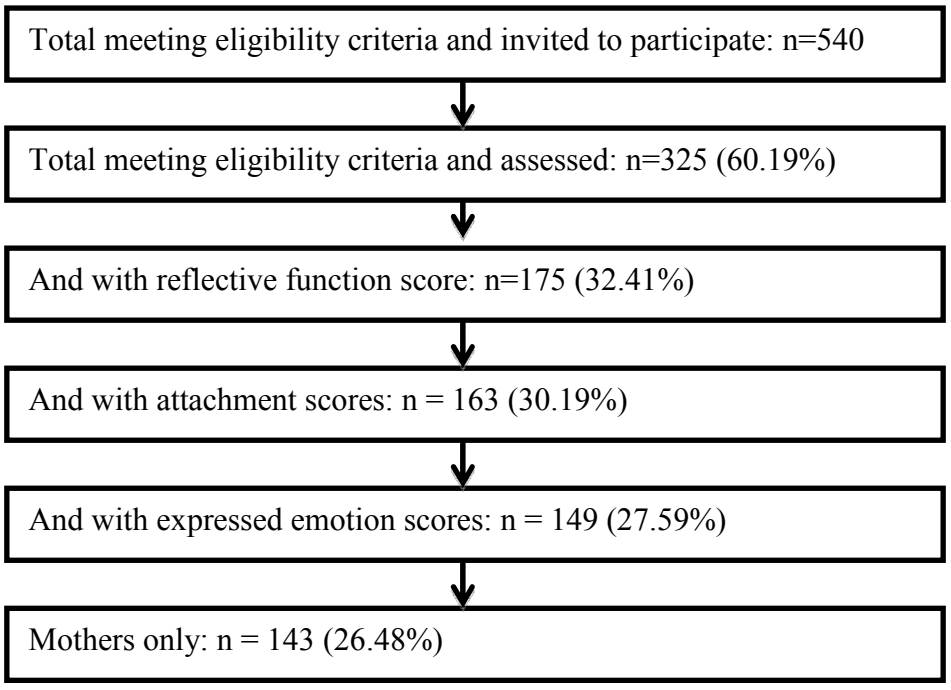

Figure 1. Flow chart showing the cases excluded at each stage of data screening

To be included into the current study, parents had to have complete data on attachment status, reflective function and expressed emotion scores. There were too few fathers to analyse separately so they were excluded from the sample.

Measures – Main Variables

The Manchester Child Attachment Story Task (MCAST; Green, Stanley, Smith, & Goldwyn, 2000). The MCAST is a doll-play vignette completion task that assesses the child's internal representations of attachment relationships. Inter-rater reliability for both 4-way MCAST attachment classifications (avoidant (A), secure (B), ambivalent (C), and disorganised (D)) and binary (security/B vs. insecurity/A+C+D) was excellent (Kappa = .93, Kappa = 1 respectively; Green, Goldwyn & Stanley, 2005). The MCAST also demonstrated concurrent validity against other well-validated measures of attachment (Goldwyn, Stanley, Smith & Green, 2000).

The Parent Development Interview (PDI-R; Slade, Aber, Bregsi, Berger & Kaplan, 2004). The PDI is a semi-structured interview that assesses the parent's representational model of the parent-child relationship that focuses on the parent's view of their own and of the children's experiences of their relationship. PDI-Rs were scored for maternal reflective functioning (RF) using the Addendum to the Reflective Functioning Scoring Manual (Slade et al., 2002). Inter-rater reliability of the RF scale in previous research was excellent (intraclass correlation coefficients (ICC) = .87). The Fonagy et al. (1998) RF manual made a distinction between demand and permit questions. Demand questions ask a subject to demonstrate their capacity for RF, whereas permit questions allow the subject to demonstrate their reflective capacity but do not explicitly ask them to use mental state language. In the PDI-R only the demand

questions are coded and these subscale scores are used to generate a global reflective function score. The demand questions relate to specific areas of the parent-child relationship, which are then coded and provide reflective function subscale scores for these areas. The current study examines five of these areas and has created subscale headings based on the questions asked. Parents were asked to describe a situation where they were enjoying spending time together with their child and these will be described as "positive interactions" throughout the project, and a situation where the parent and child are not enjoying spending time together which will be termed "negative interactions". The "joy" questions relate to aspects of the parent-child relationship that give the parent joy and will be termed "parental joy", "anger" questions relate to aspects of the relationship that make the parent feel angry and will be referred to as "parental anger" while parental "pain/difficulty" examines aspects of the relationship that are painful or difficult for the parent and will be referred to as "parental pain/difficulty". The possible range on the PDI was -1 to 9 for both the overall rating and each construct, where higher scores indicated higher levels of RF.

The Five-Minute Speech Sample (FMSS; Magaña, Goldstein, Karno & Miklowitz, 1986) is a measure of expressed emotion (EE), and requires the parent to speak for five minutes into a tape recorder without interruption about their child and how they get along together. The sample is audio-recorded, transcribed and coded, with regard to both content and emotional tone (Magaña, et al., 1986). The FMSS measure comprised two scales: criticism and warmth. The possible range on the EE criticism subscale was 0 to 3, where higher scores indicated higher levels of expressed criticism. In contrast, the possible range on the EE warmth subscale was 0 to 3, where higher scores indicated lower levels of expressed warmth. Previous inter-rater

reliability of the warmth scale was excellent (intraclass correlation coefficients (ICC) = .85) (Caspi et al., 2004). Inter-rater reliability for the original three-level EE-criticism classification showed excellent agreement, Kappa = .85 (Magaña-Amato, 1993). Research exploring the validity of the FMSS in relation to the Camberwell Family interview (a semi-structured interview assessing EE) found good concurrent validity (Moore & Kuipers 1999).

Measures – Confounding Variables

Socio-demographic characteristics. A semi-structured interview was carried out (developed for a previous trial conducted by Scott et al., 2010) that included details of the family structure, occupation (used to assess the socio economic status) and gender. Parents were also asked for details of their ethnicity based on the Office for National Statistics categories.

The Strengths and Difficulties Questionnaire (Goodman, 2001). The SDQ is a well-known and widely used questionnaire. Prosocial behaviour and peer problems showed internal consistencies below .70 for parents. Regarding test-retest reliability, all parent-rated subscales used, showed correlations below r = .70. Construct validity was examined for parent versions with most items showing satisfactory factor loadings > .40 – ≤ .70.

The Depression, Anxiety & Stress Scale (DASS; Lovibond & Lovibond, 1995a). This questionnaire has three subscales; depression, anxiety and stress, that assess the wellbeing of the child's main carer. All subscales have demonstrated excellent internal consistency (Depression (Chronbach's α= .91), Anxiety

(Chronbach's α= .84) and Stress (Chronbach's α= .90; (Lovibond & Lovibond, 1995b).

Berkeley Puppet Interview (BPI; Ablow & Measelle, 1993). This is a semi-structured interview; the current study used the two subscales that relate to the mother–child relationship (warmth/enjoyment and anger/hostility). Internal consistency was .81 in clinical and community samples (Ablow et al., 1999). Test-retest reliability was moderate in clinic and community samples (*r's* = .42 and .43, respectively). One of the only studies using the family relationship subscales found internal consistencies for the two BPI subscales used were found to be adequate; warmth/enjoyment ranged from Chronbach's α = .67 and .65 and anger/hostility ranged from Chronbach's α = .74 to .62 (Coldwell, Pike & Dunn, 2008).

The Parental Account of Child Symptoms (PACS; Taylor, Sandberg, Thorley & Giles, 1991) was used to assess the parent's view of the severity and frequency of the child's conduct problems and ADHD symptoms. There is a high level of inter-rater agreement of PACS, particularly for the subscales included in this study; correlations ranged from .92-.95 for the hyperactivity scale, and from .89-.95 for defiance (Taylor, Everitt, Thorley, Schachar, Rutter & Wieselberg, 1986).

The Eyberg Child Behvaviour Inventory (ECBI; Boggs, Eyberg, & Reynolds, 1990). This questionnaire consists of 36 items that measure specific child related problems across two scores, an intensity score and a problem score. This was used as a measure of behavioural problems rather than the SDQ conduct subscale in the current secondary analysis because it is a more sophisticated measure with a focus on

behaviour. Internal consistency has been shown to be very good for both subscales; intensity scores (Chronbach's α= .93) and problem scores (Chronbach's α= .91) (Burns & Patterson, 1990).

Alabama Parenting Questionnaire (APQ; Shelton, Frick, & Wootton, 1996). This is a 15-item self-report of parenting practices, which measures positive parenting practices (praise and rewards; parental involvement) and negative parenting practices (failure to carry out adequate monitoring and supervision, lack of consistency of discipline, corporal punishment). Internal consistency coefficients that ranged from Chronbach's α = .09 to .95 and test-retest reliability coefficients from .66 to .89 (Shelton et al., 1996). Scott, Briskman and Dadds (2011) developed the 15-item version of the APQ for use in larger trials in which assessment time is limited and found that all five dimensions of parenting can be measured using this brief version.

Procedure

Data used in this study were collected using semi-structured interview, direct observation and questionnaires from parents and children completed before those allocated to intervention started their courses. The first author assisted in coding the Parent Development Interview (See Appendix A for full details of the HCA research procedure) and conducted this secondary analysis using SPSS version 20.

Tests of normality and outliers

Histograms were created for the continuous variables used in analysis and visually examined for trends in normality. Boxplots were then created to identify outliers (see extended results section in Appendix D for a detailed explanation).

Skewness and kurtosis were also calculated in order to check the distribution of the data. In addition, as recommended by Field (2011), a z-test was applied for normality test using skewness and kurtosis. After examining the skew, kurtosis and z-scores for the variables only the SDQ Peer relationship, the three DASS subscales and the two Alabama subscales were significantly non-normal (as shown in Appendix C, Table 5). As recommended by Tabachnick and Fidell (2001) attempts were then made to transform the data, using the function 'squareroot'. The one negatively skewed variable, Alabama positive parenting score, was reversed scored (using the highest score + 1) before it was transformed as suggested by Field (2011). All z-scores for skewness and kurtosis then fell within the normal limits, under the 3.29 cut-off. After transforming the data all variables were close enough to a normal distribution to use parametric analysis.

Statistical Analysis

Initially participants were excluded if they did not have complete data on attachment status, RF and EE scores. Father's data were also excluded from analysis, so that the study only examined maternal EE and RF in relation to attachment. Group comparisons between data used and excluded from analysis were conducted using t-tests and chi-square analyses. Descriptive analysis then explored differences between the outcome (attachment status coded secure/insecure and as four categories) with the exposures (RF and EE scales) and/or potential confounders in the complete dataset. Independent t-tests and ANOVA were used with dimensional measures and chi-square with categorical data. T-tests were used for the binary comparison (secure/insecure attachment) and ANOVA analyses were used for the four level attachment classification. Independent t-tests compared the dependent variables and

confounders to investigate hypotheses one and two and assess whether there was a difference between children classified as secure or insecurely attached. Secondly, univariate ANOVAs were conducted to determine whether there was a difference between variables across the four attachment categories. A parametric correlation was completed to test the hypotheses that parental RF was associated with parental EE, and to investigate the relationship of any confounding variables to these variables.

A logistic regression analysis, using the enter method, examined the relationship between child attachment (coded secure/insecure), maternal reflective function, maternal expressed emotion and potential confounders. The number of cases with complete data for analysis limits the power and makes this investigation exploratory in nature. Multivariable analysis included subjects with complete data for all variables that were significantly associated with the two main predictor variables (RF and EE) or the outcome variable (attachment classification) in the unadjusted analyses (n =106). The sample for the logistic regression included 106 children (19.63 % of those meeting eligibility criteria for the trial) and excluded any cases that did not have data for each variable that was significantly associated with either the outcome or predictor variables. Several potential confounding variables were examined: child age, child gender, child prosocial behaviour and peer problems (SDQ), maternal depression, anxiety and stress levels (DASS), parenting practices (APQ), affect levels at home (BPI), severity and frequency of the child's conduct problems (PACS) and children's disruptive behaviour (ECBI). These variables were selected because previous literature had identified them as affecting child attachment.

The unadjusted logistic regression explored the relationship of all the predictor and confounder variables with attachment in separate models to assess the relative influence of each variable. Potential confounders were included in the multivariable

analysis if the Wald test was significant at $p \leq 0.1$. This p-value was used because research has found that more traditional levels such as .05 can fail in identifying variables known to be important (Bursac, Gauss, Williams & Hosmer, 2008), particularly in small samples.

The goodness of fit of the full multivariate model was assessed using two different measures. Firstly, the extent to which the model accurately predicts the dependent variable (child attachment style) was examined. This was compared to the extent to which the model is better able to predict group membership (secure or insecure attachment) than a model without any of our independent variables. Using percentages of classification as a measure of fit is limited because it does not provide any measure of significance. The Hosmer-Lemeshow test provides a level of significance, however, it is not recommended for use with a small sample, $n<400$. Therefore, the Model Chi-square statistic was used to see whether the full model significantly affects the dependent variable (attachment classification). This is a test of the null hypothesis that the full model has not significantly increased our ability to predict the likelihood of being classified as insecurely attached and the result means that the null hypothesis was accepted. If the chi-square is less than or equal to the level of significance of .05, the existence of a relationship between the independent variables (RF, EE and confounders) and the dependent variable will be supported.

Results

Preliminary Analysis and Missing data

Descriptive statistics for the cases with missing data that were not used in the analysis (n = 182) are provided in Appendix D, Table 4. Families with missing data included more single parent families (63 versus 43, $X^2 = 21.95$, df = 3, $p<.001$), more

families from a Black and minority ethnic (BME) background (63 versus 31, X^2 = 7.57, df = 1, p = .006), different attachment patterns (79 secure and 55 insecure with missing data attached compared to 83 and 60 with data, X^2 = 44.27, df = 2, p = .001). There was no association between the presence/absence of data and gender of the child.

Descriptive Analysis

Almost half (44%; 143/325) of mothers had completed scores for all three main variables; attachment classification, PDI and EE scales. The assessment scores and demographic characteristics of the mothers and children included in analysis are shown in Appendix D, Table 5. Of those who completed all of the measures, half (51.7%) of the children were male, mean age of the total sample of children was 73.22 months and the mean age of mother's at child birth was 28.78 months. Approaching two thirds (60.14%) of families had both biological parents at home and 78.32% were White British. In the current study there was a small proportion of children categorised with disorganised attachment (n = 27, 18.88%), compared to a larger number for securely attached children (n = 83, 58.04%).

Hypothesis 1: parents of securely attached children will have higher levels of RF

Group comparisons (based on attachment classifications) were conducted using t-tests and chi-square analyses; significance levels are also shown. Figure 2 compares the means of the PDI subscale scores and global score for the secure and insecure groups. There was a significant difference between the groups for PDI negative interactions subscale (t = 2.111, df = 141, p = .037, two-tailed). The mothers

of children with a secure attachment categorisation (mean = 5.30) were rated as having higher RF for this subscale than in the mothers of insecurely attached children (mean = 4.60). Similarly, there was a significant difference for the PDI parental anger subscale (t = 1.983, df = 140, p = .049, two-tailed). Mothers of children with a secure attachment categorisation (mean = 4.78) were rated as having higher RF for this subscale than in parents of insecurely attached children (mean = 4.08). More boys were classified as insecurely attached ($X^2 = 4.073$, df = 1, p = .044). Although, no significant difference was found in overall RF scores in relation to attachment classification, the mean value was marginally higher in the secure group (4.75 compared to 4.43, t = 1.303, df = 141, p = .195, two-tailed).

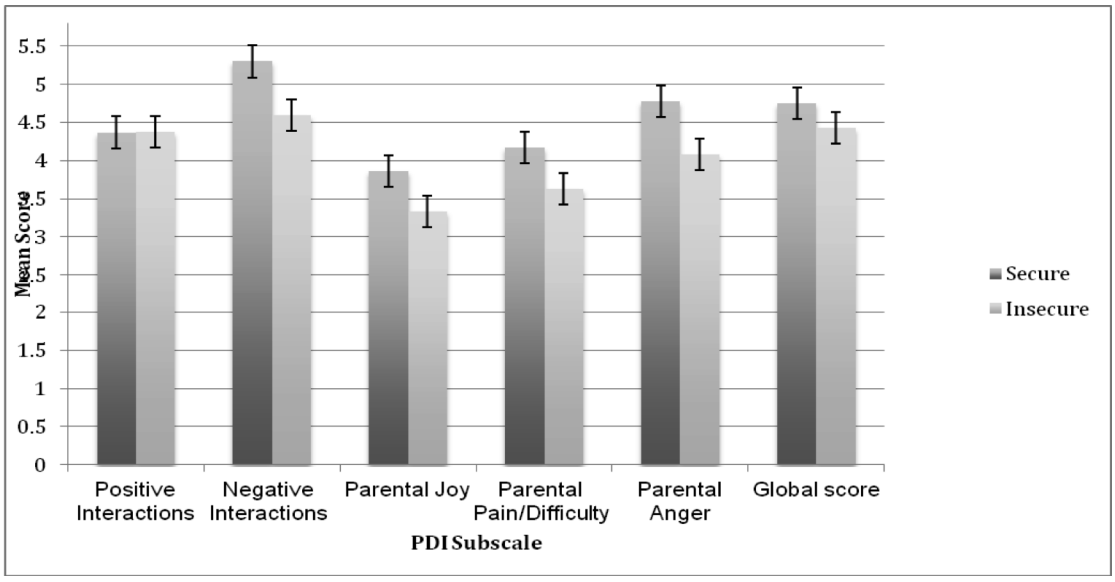

Figure 2 A comparison of the mean reflective function scores for children with secure and insecure attachment status

Hypothesis 2: parents of securely attached children will have lower levels of EE-criticism and higher levels of EE-warmth.

Chart 3 compares the mean scores of the expressed emotion measure. No significant difference was found between the attachment classifications and levels of warmth or criticism.

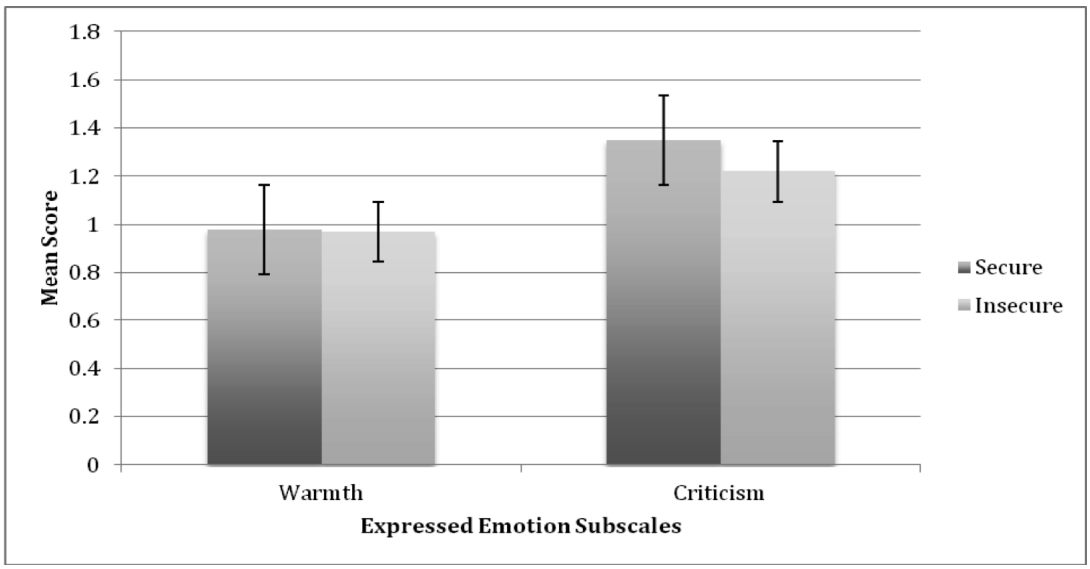

Figure 3 A comparison of the mean expressed emotion scores for children with secure and insecure attachment

Hypothesis 3 & 4: there will be a positive correlation between levels of parental RF and EE-warmth and there will also be a negative correlation between levels of parental RF and EE-criticism.

The correlation matrix shows all significant correlations between the EE and PDI subscales (Table 3). There was a significant positive correlation between all PDI scores, indicating that all RF subscales were significantly associated. As may be expected, there was also a significant correlation between EE warmth and the PDI global score, indicating that high warmth was associated with high overall RF. In

addition, EE criticism and EE warmth scores showed a significant correlation, indicating high criticism was associated with low warmth. There were no significant correlations between EE-criticism and any of the RF subscales.

Correlations between exposures and confounder variables

The correlation matrix also shows all significant correlations between variables (Table 3). Parent reported PDI negative interactions scores were significantly correlated with both child reported BPI warmth and enjoyment and BPI anger and hostility scores. Therefore, low BPI warmth and anger scores, which indicate a negative view of the relationship with their parent, were associated with high parental RF in situations where mothers and children were not getting along. In addition, high scores on Eyberg problem and intensity were associated with high EE criticism and low EE warmth.

High levels of parental depression and anxiety were associated with low levels of expressed warmth. In addition, high levels of parental stress were associated with low levels of expressed warmth, as may be expected. However, contrary to expectations, high levels of stress were associated with high levels of RF in situations that make parents feel angry. This may indicate that parents with high levels of stress experience more intense levels of difficulties with their children. In turn, it is possible this provides more opportunity to practice managing these situations, which may enable parents to mentalise about types of experiences that make them angry. However, this does not explain why the other negative situations rated for RF (such as the “parental pain/difficulty” and “negative interactions” subscales) are also not significantly correlated to parental stress.

High scores on SDQ peer problems were associated with low RF in situations where parent's felt angry and with low levels of warmth. In addition, high SDQ pro-social scores were associated with low overall RF, low RF in situations that make parents feel angry, low expressed criticism and high expressed warmth. Both PACS attention and PACS disruptive behaviour scores were significantly correlated with EE criticism scores, with high levels of attention and hyperactivity and disruptive behaviour associated with high levels of expressed criticism. Low expressed warmth was also associated with high levels of disruptive behaviour. Alabama negative parenting scores showed a significant correlation with PDI parental anger and global scores. Therefore, as may be expected, high levels of negative parenting were associated with low global RF and low levels of RF in situations that make parents feel angry.

Table 3
Intercorrelations between the Full-scale and Subscale Study Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1. PDI Positive interactions	1.00																				
2. PDI Negative interactions	.343**	1.00																			
3. PDI Parental Joy	.311**	.262**	1.00																		
4. PDI Parental Pain	.321**	.190*	.368**	1.00																	
5. PDI Parental Anger	.307**	.367**	.211*	.287**	1.00																
6. PDI Global	.626**	.637**	.488**	.555**	.698**	1.00															
7. EE Warmth						-.190*	1.00														
8. EE Criticism							.318**	1.00													
9. BPI Warmth		-.191*							1.00												
10. BPI Anger		-.186*							.259**	1.00											

Note. Correlations between full-scale and subscale data from the same study measure have been shaded blue for ease of identification
*$p < .05$ **$p < .01$

(continued overleaf)

	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
11.Eyberg Intensity			.333**	.401**			1.00										
12.Eyberg Problem			.299**	.306**			.781**	1.00									
13. DASS Depression			.220**				.186*		1.00								
14. DASS Anxiety			.172*						.616**	1.00							
15. DASS Stress	.179*		.212*				.237**		.696**	.700**	1.00						
16. PACS Attention & activity				.200*			.424**	.333**	.262**		.214*	1.00					
17. PACS Disruptive behaviour			.209*	.332**			.566**	.479**	.336**	.254**	.328**	.406**	1.00				
18. SDQ Peer problems	-.205*		.224**				.174*	.331**		.175*		.201*	.199*	1.00			
19. SDQ Pro social	-.177*	-.180*	-.182*	-.258**			-.254**	-.229*				-.169*	-.284**	-.174*	1.00		
20.Alabama positive parenting									-.321**	-.197*	-.309**					1.00	
21.Alabama negative parenting	-.298**	-.230**					.264**	.327**	.205*	.290**	.201*		.215*			-.216**	1.00

Note. Correlations between full-scale and subscale data from the same study measure have been shaded blue for ease of identification

*$p < .05$ **$p < .01$

Hypothesis 5: parental RF and EE will be independently associated with child attachment, after adjusting for all other measured variables.

Table 4 shows the adjusted and unadjusted odds ratios for the predictor and confounding variables in relation to children's attachment classification. The unadjusted analysis found that none of the EE subscales or confounders were significantly associated with attachment, while the parental joy subscale was the only PDI subscale to be significantly associated with attachment classification. Parental joy subscale was included in the multivariate analysis along with the significant variables from the group comparisons (t-test and chi-square tests); two PDI subscales (negative interactions and parental anger) and gender. In addition, Eyberg Intensity was included because the confidence interval narrowly spans 0-1, which suggests a marginal association that might become stronger after adjusting for confounding variables.

In the multivariate analysis, the Omnibus Test of Model Coefficients based on Chi-Square test is non-significant, which implies that the overall model has poor predictive ability for being classified as insecurely attached (X^2= 5.798, df = 5, p = .33). Although, there is a marginal association of gender with attachment after adjusting (p= .12). However, poor fit was also indicated by the other measures. Overall prediction success of attachment classification by the full model was 63.2% (83.9% for secure attachment and 34.1% for insecure attachment). Accuracy of prediction improved over the null model (overall accuracy 58.5%), but only by 4.7%. Nagelkerke's Pseudo R^2 was only .07, this is close to 0 and so the model does not show a great improvement on the null model with no predictors, again indicating poor fit.

Table 4
Multivariate analysis of predictor variables and confounders in relation to attachment classification

Independent Variable (Secure attachment vs. Insecure attachment)	Unadjusted Odds Ratio (95% CI)	Adjusted Odds Ratio (95% CI)
	Reflective Function Factors (PDI)	
Positive interactions	1.17 (0.91 - 1.50)	
Negative interactions	0.93 (0.76 – 1.15) **	1.00 (0.80 – 1.26)
Parental joy	**0.82 (0.65 – 1.04)***	0.84 (0.66 – 1.07)
Parental pain or difficulty	0.84 (0.67 – 1.06)	
Parental anger	0.92 (0.76 – 1.10) **	0.92 (0.75 – 1.13)
	Expressed Emotion Factors	
Warmth	0.89 (0.56 – 1.44)	
Criticism	0.84 (0.51 – 1.37)	
	Confounder Variables	
Gender (male v female)	0.56 (0.26 – 1.23)	**0.52 (0.23 – 1.18)***
DAS depression	1.04 (0.72 – 1.49)	
DAS anxiety	0.78 (0.55 – 1.12)	

* p = 0.1 ** subscales included due to significant difference in t-test analysis (CI = Confidence interval)

(continued overleaf)

Independent Variable (Secure attachment vs. Insecure attachment)	Unadjusted Odds Ratio (95% CI)	Adjusted Odds Ratio (95% CI)
DAS stress	0.97 (0.65 – 1.46)	
PACS attention and hyperactivity	1.01 (0.50 – 2.06)	
PACS disruptive behaviour	0.84 (0.33 – 2.13)	
SDQ Pro social parent	0.93 (0.75 – 1.15)	
SDQ peer problems parent	1.05 (0.67 – 1.66)	
BPI warmth	1.21 (0.84 – 1.76)	
BPI anger and hostility	1.07 (0.77 – 1.49)	
Eyberg Intensity	1.00 (0.99 – 1.01)	1.00 (0.98 – 1.01)
Eyberg Problem	0.99 (0.94 – 1.04)	
Alabama Negative parenting	0.76 (0.33 – 1.74)	
Alabama Positive parenting	1.31 (0.73 – 2.36)	

Summary of results

With regards to hypothesis one, no significant difference was found in overall RF scores in relation to attachment classification. However, mothers of children with a secure attachment categorisation showed higher levels of RF on the negative interactions and the parental anger subscales of the PDI compared to mothers of insecurely attached children. No significant difference was found between the attachment classifications and levels of EE-warmth or EE-criticism, which does not support hypothesis two. The significant correlation between EE-warmth and global RF indicates that high warmth was associated with high global RF, supporting hypothesis three. However, there were no significant correlations between EE-criticism and the RF subscales, which does not support hypothesis four. Finally, hypothesis five was also not supported by the findings as the overall model in the logistic regression has poor predictive ability for being classified as insecurely attached.

Discussion

Interpretation of the Substantive Findings

This study extends previous research through the simultaneous investigation of measures of maternal EE and RF in relation to child attachment status. No group difference was found between global RF and childhood attachment. However, there was partial support for hypothesis one: parents of securely attached children had higher RF, although, this was only significant in situations where there was parental anger or negative interactions. The lack of difference in global RF scores might be due to the moderate sample size when cases were split into groups (secure n = 83, insecure n = 60). Since the population examined was children at risk of behavioural difficulties it is likely that they are more similar than a general population sample that would include both low risk and high-risk families (including children with behavioural problems). Therefore, limited variability in overall RF scores might have contributed to the lack of significant results.

A tentative interpretation of the finding that mothers with securely attached children had higher levels of RF during negative interactions and when they were angry, could be that attachment classification influences the levels of maternal RF in different negative situations. Conversely it is possible that high maternal RF in such situations enables mothers to respond more sensitively to their child, leading to secure attachment. This study is cross-sectional so it is not possible to imply causality; therefore this relationship requires further investigation (see recommendations in future research). This finding requires replication and must be interpreted with caution given the number of analyses that were conducted and therefore, the potential for Type 1 error.

The second hypothesis predicting that mothers of securely attached children will have lower levels of EE-criticism and higher levels of EE-warmth, was also not supported. There was no evidence of a significant difference in levels of maternal EE (warmth and

criticism) between children classified as securely versus insecurely attached. This finding may suggest that there is no difference between levels of maternal EE in the different childhood attachment classification groups in this population. However, it may also be due to the fact that this is an at-risk sample, rather than general population, where parents reported their children displayed difficult behaviours above the mean level. Therefore, mothers in this sample may find these behaviours difficult to manage, with less variable levels of EE in both the secure and insecurely attached groups, meaning there is not enough variability to detect differences. The current sample may not be large enough to detect any differences in levels of maternal EE between the attachment groups. Previous literature states that very high maternal EE was associated with severe disorganisation of attachment representation in a clinical sample of 4-9 year olds diagnosed with ODD/CD (Green et al., 2007). Therefore, it is possible that the association between EE and attachment may be driven by its association with disorganised attachment rather than other categories, and the small proportion of children with disorganised attachment in the current sample may explain the lower levels of EE reported and lack of relationship with attachment.

As expected, the correlational analysis found that high warmth was significantly correlated with high global RF, providing support for hypothesis three, which predicted a positive relationship between levels of parental RF and EE-warmth. This may suggest that mothers who are warm towards their child are better able to reflect about their child. Alternatively, it is plausible that mothers who have high levels of RF are more likely to express warmth towards their child. One of the areas that ratings of EE-warmth are based on is the expression of concern, understanding, and interest in the person, which could be expected to relate to mothers' RF. Due to the cross-sectional analysis it is not possible to imply directionality. Unexpectedly, there was no significant correlation between EE-

criticism and RF levels. This does not support hypothesis four, which predicted a negative relationship between these variables. Whilst this finding is surprising, it is possible that there is no relationship between levels of RF and EE-criticism. Previous research suggests it is important to consider the particular dimensions of EE, rather than an overall EE level (Kershner, Cohen & Coyne, 1996). Therefore, it is plausible that because criticism and warmth are separate dimensions of EE they may have different relationships with parental RF. It is also possible that clustering and a lack of variability in scores meant it was not possible to detect a correlation. The standard deviation is small for EE-criticism, indicating limited variability, which may explain the lack of relationship between RF and criticism. It is also possible that the lack of statistical power is affecting this finding, and the study requires a larger sample to detect a correlation. To the author's knowledge this is the first study to examine the relationship between parental RF and EE, therefore further examination of these relationships is required (see future research).

In addition, the logistic regression found that none of the EE or RF variables significantly contributed to the prediction of attachment. The current study has not found any evidence to support the notion that the relationship between RF, EE and attachment classification remains after adjusting for relevant confounders in a population of children with high levels of CD symptoms. To the author's knowledge no other study has examined all three variables together. Furthermore, previous studies examining RF or EE with child attachment adjust for fewer confounder variables than the current study, therefore the relationship between RF and attachment in previous studies may have been affected by an unmeasured variable.

These results do not provide further support for Slade et al's. (2005) finding that mother's RF capacity predicts the quality of her infant's attachment. However, it is possible that a relationship between these variables does exist but it has not been found due

to the small sample size and limited power for a regression analysis. Therefore it is important to interpret the results with caution because any explanation of the findings can only be seen as tentative due to these issues. This finding may also be because the current study is using PDI subscales examining RF in different situations, and so is more complex and nuanced, in comparison to previous studies that have only used global RF.

Methodological issues

This study used a sample of children at risk of developing CD, which has both strengths and weaknesses. One positive point is that it extends current attachment research into a population of children with high levels of CD symptoms. It also adds to the current literature around RF and attachment, as we would expect maternal RF to be lower in this sample. This is an important area for research because early behavioural problems may lead to a developmental trajectory for CD, ODD and adult antisocial personality disorders (Guttmann-Steinmetz & Crowell, 2006). In addition, research has shown an association between the early onset of conduct problems and attachment behaviours (Speltz, DeKlyen & Greenberg, 1999). Another strength of the current study is the use of standardised measures.

This study was constrained by the amount of data available and the measures applied, because it was a secondary analysis. The small sample size (n=143), and limited variability in scores on some measures (e.g., EE) restricted the power and opportunity to detect an effect or association (Last, 2001). The diminutive sample and limited power means that the logistic regression analysis should be viewed as exploratory. In addition, several cases were excluded from the original data where data were missing on either of the key variables being examined. Although significant differences were found between children with and without missing data, which may bias the sample, it goes beyond the

scope of the current project to interpret these differences. The missing data sample consisted of higher levels of single parents and families from a BME background along with a lower number of children classified as securely attached. Therefore, the sample used for analysis may reflect the lower risk proportion of this population, which may be expected to be associated with higher scores of RF and lower levels of EE, further reducing the power available to study the questions asked.

Using the Five Minute Speech Sample (FMSS) to measure EE has been found to underestimate the rate of high emotional over-involvement (Jacobsen et al., 2000) and so may have affected the overall analysis of EE and attachment. However, this study does not overtly investigate EE over-involvement, so it is difficult to assess whether this tendency to underestimate over-involvement will have affected the findings or not. Additionally, the EE measure applied an ordinal scale, which may have further limited power.

There was no significant difference between the four attachment categories when RF and EE scores were examined. This may suggest that there is no difference in these scores in this at-risk sample, or it may be due to the small numbers in the analysis once attachment was split into four categories that obscured a difference that could have been detected in a larger sample. There was also an uneven split of the attachment types in this sample (avoidant n=21, secure n=83, ambivalent n=12, disorganised n=27), which could impact on the likelihood of detecting a group difference in hypotheses one and two. The exclusion criteria requiring data on all three main variables limited the sample size and the simultaneous collection of data regarding childhood attachment and the other variables made it impossible to plan the number of parent-child dyads in each attachment group for equal comparisons. In previous research the RF scale has been examined using the global score, rather than examining the different sections/subscales that are used to create the global score. This may be a strength of the study as it is a novel approach to examining RF

and allows investigation of parental levels of RF in specific situations. However, it also limits comparability with previous research.

Clinical Implications of RF and Attachment

There is a risk the current findings might be due to chance and could be interpretable in several ways therefore it is too early to make firm recommendations for clinical practice. However, if replicated, the findings could have application to clinical practice. The main finding suggests that, in a population of children with high levels of CD symptoms, mothers of securely attached children showed higher levels of RF in situations with parental anger and negative parent-child interactions compared to mothers of insecurely attached children. Slade et al.'s (2005) findings suggest that high maternal RF predicts child attachment status. The current finding may suggest that higher levels of RF during stressful periods in the mother-child relationship, such as when the parent feels angry or during negative interactions with their child, may help maintain secure child attachment. However, the converse may also be true, as directionality of relationship was not tested.

The current finding supports links between RF in specific stressful situations and child attachment. This has clinical implications for the interventions offered to families and children diagnosed with CD. Changes in negative maternal perceptions of their child have been reported following a single video-feedback session modelling and stimulating maternal RF in traumatised mothers and their babies (Schechter et al., 2006). These results linking maternal RF to both child and parent outcomes suggest that interventions should target these qualities. For example, the Parents First program aims to help parents consider their children's internal experience as it relates to their behaviour. However, the current study cannot support recommendations for clinical practice, given the highly tentative

findings. Additionally, there was no significant difference between maternal levels of RF in other negative situations, such as parental pain/difficulty, for secure and insecurely attached children.

Clinical implication of EE and Attachment

Although there was no significant difference found between maternal EE in the secure and insecurely attached groups of children, the sample studied did not include a high number of disorganised children, the category shown to be associated with high levels of EE. Therefore, it is worth considering implications of an association between child attachment and maternal EE, in case the lack of findings is related to the sample. If an association between these variables exists it raises questions about how EE may relate to models of caregiving representations and behaviour developed within attachment research. Assessments of EE or attachment have not been widely studied in clinical or at-risk contexts and opens up the possibility of more systematic parent based interventions in complex cases. The MCAST can be combined with developmental assessment of the child, and used as part of a comprehensive, evidence-based clinical assessment of the attachment dynamics within a parent-child relationship (Green, 1996). Parents with unresolved attachment representations may be less able to make good use of group parent training approaches (Routh, Hill, Steele, Elliot, & Dewey, 1995). Brief individualised video-based parental interventions, similar to techniques used in reducing EE, also show encouraging effectiveness in modifying attachment disorganisation in infancy (Juffer, Bakermans-Kranenburg, & van IJzendoorn, 2005).

Further Research

It would be essential to replicate the current study with larger samples in each attachment classification to examine any specific differences in RF and EE levels between the groups, in both a general population and children with CD symptoms. Research examining the mediation and moderation effects between RF, EE and attachment would also be interesting with regards to investigating predictions about causality and theories on these concepts. Another area for future research would be investigating the relationship between EE, RF and child attachment pre and post CD interventions. Parent management training (PMT) programs are the most well-established treatments available for reducing child disruptive behaviours (Kazdin, 2005). This would extend the current research and investigate whether levels of EE or RF improve after PMT interventions and whether attachment classification is affected. Previous research examining parenting practices suggests that clinicians should focus on helping mothers reduce critical or overinvolved attitudes because this may have a positive effect on the quality of the mother-child attachment relationship (Jacobsen et al, 2000). Therefore, investigating whether attachment classification is affected by interventions specifically targeting EE would also be beneficial.

The relationship between high maternal EE and childhood attachment classification, specifically disorganised attachment, is a relatively new area of research and requires further exploration. Another under-explored area is child attachment and paternal EE or RF, therefore it would be interesting to complete the current study based on father reported measures and interviews to examine any parental differences. Finally, future studies could use a longitudinal design to examine the association between childhood attachment and maternal RF at various time points between birth and adolescence, to explore whether development affects levels of RF and attachment.

Conclusions

The current study did not find that maternal RF and EE predicted child attachment classification among young children with high levels of behavioural problems. However, group comparisons found that mothers of securely attached children had higher levels of RF in situations where parents were experiencing anger and in negative interactions with the child. If this finding were replicated, it may help clinicians to identify high-risk mother-child dyads in populations of children with behavioural difficulties. Interventions could then be targeted at increasing maternal RF, with the hope that this would improve their ability to parent in situations where their child's behaviour causes them stress. This may then improve the parent-child relationship. There remains opportunity for future research to validate the parental RF construct, confirm previous findings, and fill gaps in the literature regarding the parent's capacity to insightfully reflect upon the mental world of her child and how this is associated with EE and attachment.

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Appendices

Appendix A: Additional Journals searched for relevant articles

Journal Title	Repeats	Articles for background	Articles for review
Attachment and Human Development	3	3	0
British Journal of Developmental Psychology	0	0	0
Developmental Psychology	3	0	0
Journal of Abnormal Child Psychology	1	0	0
Journal of the American Academy of Child and Adolescent Psychiatry	1	0	0
Journal of Child Psychology and Psychiatry	4	0	0
Infant Behaviour and Development	1	0	0
Infant Mental Health	1	1	0

Appendix B: Ethical Approval

PSYCHOLOGY DEPARTMENT ETHICAL APPROVAL FORM

Tick one box: ☐ **STAFF Project** ☑ **POSTGRADUATE Project** ☑ **TRACK A**
☐ **UNDERGRADUATE Project** ☐ **TRACK B**
☐ **ROUTINE EXTENSION TO PRE-APPROVED STUDY**

Title Of Project: ~~The influence of maternal reflective functioning and expressed~~ emotion on children's attachment among children with or at risk of behavioural problems

Name of researcher(s) Amy Savile

Name of supervisor (for student research) Dr Tamsin Ford Date 06/03/2012

		YES	NO	N/A
1	Will you describe the main experimental procedures to participants in advance, so that they are informed in advance about what to expect?			☑
2	Will you tell participants that their participation is voluntary?			☑
3	Will you obtain written consent for participation?			☑
4	If the research is observational, will you ask participants for their consent to being observed?			☑
5	Will you tell participants that they may withdraw from the research at any time and for any reason?			☑
6	With questionnaires, will you give participants the option of omitting questions they do not what to answer?			☑
7	Will you tell participants that their data will be treated with full confidentiality and that, if published, it will not be identifiable as theirs?			☑
8	Will you debrief participants at the end of their participation (ie. give them a brief explanation of the study)?			☑

If you have ticked **No** to any of Q1-8, but have **ticked box A** overleaf, please give any explanation on a separate sheet. (Note: N/A = not applicable)

		YES	NO	N/A
9	Will your project involve deliberately misleading participants in any way?		☑	
10	Is there a realistic risk of any participants experiencing either physical or psychological distress or discomfort? If **Yes,** give details on a separate sheet and state what you will tell them to do if they should experience any problems (e.g. who they can contact for help).			☑

If you have ticked **Yes** to 9 or 10 you should normally **tick box B** overleaf; if not, please give a full explanation on a separate sheet.

			YES	NO	N/A
11	Does your study involve work with animals? If yes, and your study is *purely* observational, please **tick box A.** All other studies should **tick box B** and provide supporting information.			☑	
12	Do participants fall into any of the following special groups? If they do, please refer to BPS guidelines, and **tick box B** overleaf. **Please note that you may also need to gain satisfactory CRB clearance or equivalent for overseas participants.**	School children (under 18 years of age)			☑
		People with learning or communication difficulties			☑
		Patients			☑
		Those at risk of psychological distress or otherwise vulnerable			☑
		People in custody			☑
		People engaged in illegal activities (e.g. drug taking)			☑

PSYCHOLOGY DEPARTMENT ETHICAL APPROVAL FORM

Tick one box: ☐ **STAFF Project** ☑ **POSTGRADUATE Project** ☑ **TRACK A**
☐ **UNDERGRADUATE Project** ☐ **TRACK B**
☐ **ROUTINE EXTENSION TO PRE-APPROVED STUDY**

Title Of Project: ~~The influence of maternal reflective functioning and expressed~~ emotion on children's attachment among children with or at risk of behavioural problems

Name of researcher(s) Amy Savile

Name of supervisor (for student research) Dr Tamsin Ford Date 06/03/2012

		YES	NO	N/A
1	Will you describe the main experimental procedures to participants in advance, so that they are informed in advance about what to expect?			☑
2	Will you tell participants that their participation is voluntary?			☑
3	Will you obtain written consent for participation?			☑
4	If the research is observational, will you ask participants for their consent to being observed?			☑
5	Will you tell participants that they may withdraw from the research at any time and for any reason?			☑
6	With questionnaires, will you give participants the option of omitting questions they do not what to answer?			☑
7	Will you tell participants that their data will be treated with full confidentiality and that, if published, it will not be identifiable as theirs?			☑
8	Will you debrief participants at the end of their participation (ie. give them a brief explanation of the study)?			☑

If you have ticked **No** to any of Q1-8, but have **ticked box A** overleaf, please give any explanation on a separate sheet. (Note: N/A = not applicable)

		YES	NO	N/A
9	Will your project involve deliberately misleading participants in any way?		☑	
10	Is there a realistic risk of any participants experiencing either physical or psychological distress or discomfort? If **Yes,** give details on a separate sheet and state what you will tell them to do if they should experience any problems (e.g. who they can contact for help).			☑

If you have ticked **Yes** to 9 or 10 you should normally **tick box B** overleaf; if not, please give a full explanation on a separate sheet.

			YES	NO	N/A
11	Does your study involve work with animals? If yes, and your study is *purely* observational, please **tick box A.** All other studies should **tick box B** and provide supporting information.			☑	
12	Do participants fall into any of the following special groups? If they do, please refer to BPS guidelines, and **tick box B** overleaf. **Please note that you may also need to gain satisfactory CRB clearance or equivalent for overseas participants.**	School children (under 18 years of age)			☑
		People with learning or communication difficulties			☑
		Patients			☑
		Those at risk of psychological distress or otherwise vulnerable			☑
		People in custody			☑
		People engaged in illegal activities (e.g. drug taking)			☑

T J Ford

Signed... .....Print Name...T J Ford..... Date...7 March 2012..
(Lead Researcher or Supervisor) Email.....tamsin.ford@pms.ac.uk.....

STATEMENT OF ETHICAL APPROVAL

This project has been considered using agreed Departmental procedures and is now approved.

Signed.....Print Name.....Date.....
(Chair, Departmental Ethics Committee)

UNIVERSITY OF EXETER | MEDICAL SCHOOL

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18 December 2013

Dear Amy

Access to data from the Helping Children Achieve Trial: Original trial ethics number CREC/07/08-134: Revised ethics number PNM/10-118: Trial number ISRCTN53662728

I am writing on behalf of the Principle Investigator (Stephen Scott) and myself to confirm permission to conduct a secondary analysis on baseline data from the Helping Children Achieve Trial for your major research project as part of you clinical doctorate in psychology.

Anonymised data has been provided for you along with research supervision. We would be delighted to support you to submit outputs from this data for publication, and expect that you would send us drafts of any work that came from the project, other than your dissertation, prior to submission for publication.

We wish you luck in your viva.

Yours sincerely

T J Ford

Tamsin Ford
(Lead for West country HCA)

cc. Stephen Scott, Institute of Psychiatry, Kings College London

Appendix C: Child and Adolescent Mental Health – Author Guidance

1. Contributions from any discipline that further knowledge of the mental life and behaviour of children are welcomed. Papers are published in English, but submissions are welcomed from any country. Contributions should be of a standard that merits presentation before an international readership. Papers may assume any of the following forms: Review Articles; Original Articles; Practice Guidelines; Innovations in Practice. **Review Articles**: These papers are usually commissioned; they should survey an important area of interest within the general field. **Original Articles**: These papers should consist of original research findings. **Practice Guidelines** and **Innovations in Practice**: Submission to these sections should conform to the specific guidelines, given in full below.

2. Submission of a paper to *Child and Adolescent Mental Health* will be held to imply that it represents an original article, not previously published; that it is not being considered for publication elsewhere; and that if accepted for publication it will not be published elsewhere without the consent of the Editors.

3. Manuscripts should be submitted online. For detailed instructions please go to: http://mc.manuscriptcentral.com/jcpp-camh and *Check for existing account* if you have submitted to or reviewed for the journal before, or have forgotten your details. If you are new to the journal *Create a new account.* Help with submitting online can be obtained from Piers Allen at ACAMH (e-mail Piers.Allen@acamh.org.uk)

4. Authors' professional and ethical responsibilities Disclosure of Interest Form: All authors will be asked to download and sign a full Disclosure of Interests form and acknowledge this and sources of funding in the manuscript. *Ethics* Authors are reminded that the *Journal* adheres to the ethics of scientific publication as detailed in the *Ethical principles of psychologists and code of conduct* (American Psychological Association, 2010). These principles also imply that the piecemeal, or fragmented publication of small amounts of data from the same study is not acceptable. The Journal also generally conforms to the Uniform Requirements for Manuscripts of the International Committee of Medical Journal Editors (ICJME) and is also a member and subscribes to the principles of the Committee on Publication Ethics (COPE).

Informed consent and ethics approval Authors must ensure that all research meets these ethical guidelines and affirm that the research has received permission from a stated Research Ethics Committee (REC) or Institutional Review Board (IRB) , including adherence to the legal requirements of the study county. Within the Methods section, authors should indicate that 'informed consent' has been appropriately obtained and state the name of the REC, IRB or other body that provided ethical approval. When submitting a manuscript, the manuscript page number where these statements appear should be given.

Recommended guidelines and standards The Journal requires authors to conform to CONSORT 2010 (see CONSORT Statement) in relation to the reporting of randomised controlled clinical trials; also recommended is the Extensions of the CONSORT Statement with regard to cluster randomised

controlled trials). In particular, authors must include in their paper a flow chart illustrating the progress of subjects through the trial (CONSORT diagram) and the CONSORT checklist. The flow diagram should appear in the main paper, the checklist in the online Appendix. Trial registry name, registration identification number, and the URL for the registry should also be included at the end of the methods section of the Abstract and again in the Methods section of the main text, and in the online manuscript submission. Trials should be registered in one of the ICJME-recognised trial registries: Australian New Zealand Clinical Trials Registry Clinical Trials Nederlands Trial Register The ISRCTN Register UMIN Clinical Trials Registry Manuscripts reporting systematic reviews or meta-analyses should conform to the PRISMA Statement. The Equator Network is recommended as a resource on the above and other reporting guidelines.

5. Exclusive License Form: Authors will be required to sign an Exclusive License Form (ELF) for all papers accepted for publication. Please note that signing of the ELF does not affect ownership of copyright in the material. Copies of the form can be downloaded here.

6. Manuscripts should be double spaced and conform to the house style of *CAMH*. The first page of the manuscript should give the title, name(s) and address(es) of author(s), and an abbreviated title (running head) of up to 80 characters. Specify the author to whom correspondence should be addressed. *Summary*: Authors should include a brief **Abstract** highlighting the main points of their article. This abstract should not exceed 100 words and should be structured under the headings: Background; Method; Results; Conclusions. **Keywords** (3-6) should be given below the Abstract.

7. Papers submitted should be concise and written in English in a readily understandable style, avoiding sexist and racist language. **Papers should not exceed 5,500 words, including References and Tables. Occasionally, longer articles may be accepted after negotiation with the Editors. Authors should include a word count of their paper.**

8. Authors who do not have English as a first language may choose to have their manuscript professionally edited prior to submission; a list of independent suppliers of editing services can be found at http://authorservices.wiley.com/bauthor/english_language.asp. All services are paid for and arranged by the author, and use of one of these services does not guarantee acceptance or preference for publication.

9. For referencing *CAMH* follows a slightly adapted version of the style used by *The Journal of Child Psychology and Psychiatry* (i.e. APA). References in running text should be quoted showing author(s) and date. For up to three authors, all surnames should be given on first citation; for subsequent citations or where there are more than three authors, 'et al.' should be used. A full reference list should be given at the end of the article, in alphabetical order. References to journal articles should include the authors' surnames and initials, the year of publication, the full title of the paper, the full name of the journal, the volume number, and inclusive page numbers. Titles of journals must not be abbreviated. References to chapters in books should include authors' surnames and initials, year of publication, full chapter title, editors' initials and surnames, full book title, page numbers, place of

publication and publisher.

10. Tables: These should be kept to a minimum and not duplicate what is in the text; they should be clearly set out and numbered and should appear at the end of the main text, with their intended position clearly indicated in the manuscript.

11. Figures: Any figures, charts or diagrams should be originated in a drawing package and saved within the Word file or as an EPS or TIFF file. See http://authorservices.wiley.com/bauthor/illustration.asp for further guidelines on preparing and submitting artwork. Titles or captions should be clear and easy to read. These should appear at the end of the main text.

12. Footnotes: These should be avoided as much as possible, but if absolutely necessary use a superscript number for footnote indicators in the text, and give footnotes at the bottom of the relevant page of text.

13. Proofs: Proofs will be sent to the designated author only. These will be sent via e-mail as a PDF file and therefore a current e-mail address must always be given to the journal office. Only typographical or factual errors may be changed at proofs stage, and the publisher reserves the right to charge authors for correction of non-typographical errors.

14. The designated author of a published paper will receive a PDF file of their final published article. The designated author should undertake to forward copies of the PDF file to their co-authors.

Appendix D: Extended Method - Normality check

Tests of normality and outliers

Histograms were created for the continuous variables used in analysis and visually examined for trends in normality. Boxplots were then created to identify outliers. This highlighted outliers in the BPI anger and hostility scale, the three DASS subscales, the two PACS subscales, the two Alabama parenting subscales, the PDI "positive interactions" score and the PDI global score. Skewness and kurtosis were also calculated in order to check the distribution of the data. A liberal interpretation of ± 1.00 as indicative of departures from normality was utilized for both skewness, the symmetry of a distribution, and kurtosis, the clustering of scores toward the center of a distribution (George & Mallery, 2003, as cited in Meyers, Gamst & Guarino, 2005). In addition, as recommended by Field (2011), a z-test was applied for normality test using skewness and kurtosis. A z-score is obtained by dividing the skewness and/or kurtosis values by their standard errors. For medium-sized samples ($50 < n < 300$), the null hypothesis is rejected at absolute z-value over 3.29, which corresponds with a alpha level 0.05, and it is concluded that the distribution of the sample is non-normal (Kim, 2013). The kurtosis value for BPI warmth was greater than 1, however the z-score was still below the designated critical value. After examining the skew, kurtosis and z-scores for the variables only the SDQ Peer relationship, DASS subscales and Alabama subscales were significantly non-normal. The outliers in the other variables were left in for analysis, as they did not significantly affect the distribution of the data. As recommended by Tabachnick and Fidell (2001) attempts were then made to transform the data, using the function 'squareroot'. The one negatively skewed variable, Alabama positive parenting score, was reversed scored (using the highest score + 1) before it was transformed as suggested by Field (2011). All z-scores for skewness and kurtosis then fell within the normal limits, under the 3.29 cut-off.

Appendix D: Extended Method

Table 5
Skew, Kurtosis and Z-scores

Variable	Skewness	SE skewness	z-skewness (3dp)	Kurtosis	SE Kurtosis	z-kurtosis (3dp)
BPI warmth (n=138)	-0.315	0.206	-1.529	1.045	0.410	2.549
BPI anger&hostility (n=138)	0.131	0.206	0.636	0.233	0.410	0.568
EE warmth (n=143)	0.284	0.203	1.399	-0.905	0.403	-2.246
EE criticism (n=143)	0.451	0.203	2.223	-0.149	0.403	-0.370
Eyberg intensity (n=133)	0.441	0.210	2.1	0.003	0.417	0.007
Eyberg Problem (n=116)	0.214	0.225	0.951	-0.614	0.446	-1.377
DASS Depression (n=131)	1.481	0.212	6.986	2.387	0.420	5.683
DASS anxiety (n=131)	1.792	0.212	8.453	3.029	0.420	7.212
DASS stress (n=130)	0.976	0.212	4.604	0.732	0.422	1.735
PDI clicked (n=143)	0.466	0.203	2.296	-0.215	0.403	-0.533
PDI not clicked (n=143)	-0.323	0.203	-1.591	-0.548	0.403	-1.360
PDI joy (n=143)	-0.021	0.203	-0.103	-0.657	0.403	-1.630
PDI pain (n=143)	0.029	0.203	0.143	-0.260	0.403	-0.645
PDI angry (n=142)	-0.014	0.203	-0.069	-0.541	0.404	-1.339
PDI global (n=143)	0.261	0.203	1.286	-0.368	0.403	-0.913
PACS attention (n=142)	0.648	0.203	3.192	-0.083	0.404	-0.205
PACS disruption (n=143)	0.396	0.203	1.951	-0.046	0.403	-0.114
SDQ Peer parent (n=142)	0.694	0.203	3.419	-0.497	0.404	-1.230
SDQ Pro social parent	-0.591	0.241	-2.452	-0.306	0.478	-0.640
Alabama all positive (n=133)	-0.841	0.210	-4.005	0.219	0.417	0.525
Alabama all negative (n=133)	0.694	0.210	3.305	0.964	0.417	2.312
Transformed data						
DASS Depression (n=131)	0.103	0.212	0.4858	-0.505	0.420	-1.202
DASS anxiety (n=131)	0.563	0.212	2.656	-0.689	0.420	-1.640
DASS stress (n=130)	-0.334	0.212	-1.575	0.508	0.422	1.204
SDQ Peer parent (n=142)	-0.268	0.203	-1.320	-1.025	0.404	-2.537
Alabama all positive (n=133)	-0.333	0.210	-1.586	-0.275	0.417	-0.659
Alabama all negative (n=133)	0.309	0.210	1.471	0.282	0.417	0.676
Alabama all positive (highest+1) (n=133)	0.234	0.210	1.114	-0.630	0.417	-1.511

Appendix E: Extended Results

Table 4
Descriptive Analysis (Mean, standard deviation, chi-square, t-test)

Variables	**Used data n = 143**	**Missing data n = 182**	P value	Number of missing cases with variable data (n)
Demographics				
Mean age in months (SD)	**73.22 (7.16)**	**71.96 (6.20)**		182
% Males	**51.7**	**59.34**		182
Mean number of adults over 16yrs (SD)	**1.84 (0.69)**	**1.81 (0.73)**		160
Mean number of children under 16yrs (SD)	**2.28 (0.93)**	**2.43 (1.15)**		160
Mean mother's age at child's birth (SD)	**28.78 (6.21)**	**27.32 (6.40)**		146
Both biological parents family	**86**	**84**	0.000	84
Single parent family	**43**	**63**	0.000	63
Reconstituted family	**12**	**12**	0.000	12
Ethnicity: White British	**112**	**113**	0.004	113
Ethnicity: BME	**31**	**63**	0.004	63
Secure attachment	**83**	**79**	0.000	79
Insecure attachment	**60**	**55**	0.000	55
PDI scores				
Mean Clicked (SD)	**4.38 (1.61)**	**3.94 (1.39)**		33
Mean Not Clicked (SD)	**5.01 (1.98)**	**5.03 (1.83)**		33
Mean Joy (SD)	**3.64 (1.67)**	**3.41 (1.74)**		32
Mean Pain or difficulty (SD)	**3.94 (1.72)**	**4.22 (1.45)**		32
Mean Angry (SD)	**4.49 (2.10)**	**4.50 (1.28)**		30
Mean Global Score (SD)	**4.62 (1.42)**	**4.53 (1.14)**		32

(continued overleaf)

Variables	**Used data n = 143**	**Missing data n = 182**	P value	Number of missing cases with variable data (n)
Expressed emotion				
Mean Warmth (SD)	**0.97 (0.82)**	**1.00 (0.76)**		22
Mean Criticism (SD)	**1.29 (0.81)**	**1.14 (0.77)**		22
DASS Scores				
Mean Depression (SD)	**3.98 (4.00)**	**4.59 (4.53)**		129
Mean Anxiety (SD)	**2.51 (3.41)**	**2.65 (3.19)**		123
Mean Stress (SD)	**6.20 (4.25)**	**6.34 (3.90)**		124
BPI scores				
Mean Positive affect (SD)	**5.38 (1.17)**	**5.31 (1.39)**		97
Mean Negative affect (SD)	**4.80 (1.20)**	**4.94 (1.36)**		97
PACS scores				
Mean attention & activity (SD)	**0.88 (0.55)**	**0.94 (0.57)**		162
Mean disruptive behaviour (SD)	**1.33 (0.45)**	**1.30 (0.54)**		158
Eyberg scores				
Mean Eyberg Intensity Score (SD)	**131.0 (29.84)**	**137.19 (33.41)**		129
Mean Eyberg Problem Score (SD)	**13.98 (8.15)**	**14.73 (8.58)**		117
SDQ				
Mean Parent Pro social (SD)	**7.46 (1.84)**	**7.28 (1.92)**		182
Mean Parent Peer problems (SD)	**2.23 (1.98)**	**2.24 (1.97)**		182
Alabama Parenting Questionnaire				
Mean All positive parenting (SD)	**26.39 (2.81)**	**25.98 (3.09)**		130
Mean All negative parenting (SD)	**16.91 (4.05)**	**17.50 (3.68)**		130

Table 5
Descriptive Analysis (Mean, standard deviation, chi-square, t-test, ANOVA)

Variables	Avoidant Attachment (A) n =21	Secure attachment (B) n =83	Ambivalent attachment (C) n = 12	Disorganised attachment (D) n=27	**Secure attachment n = 83**	**Insecure attachment n = 60**	Whole Sample (N = 143)
Demographics							
Mean age in months (SD)	73.38 (8.17)	73.67 (6.89)	72.25 (6.44)	72.11 (7.70)	**73.67 (6.89)**	**72.58 (7.54)**	73.22 (7.16)
% Males	57.14 *	44.58 *	41.67 *	74.07 *	**44.58 ***	**61.67 ***	51.75
Mean Number of adults over 16yrs (SD)	2.00 (1.14)	1.86 (0.59)	1.50 (0.52)	1.81 (0.57) [10]	**1.86 (0.59)**	**1.81 (0.802)** [13]	1.84 (0.69) [20]
Mean Number of children under 16yrs (SD)	2.05 (1.12)	2.37 (0.91)	2.08 (0.90)	2.27 (0.83) [10]	**2.37 (0.91)**	**2.15 (0.94)** [13]	2.28 (0.93) [20]
Mean Mother's age at child's birth (SD)	27.72 (7.35) [1]	28.70 (5.72) [4]	27.66 (6.55) [9]	30.39 (6.69) [11]	**28.70 (5.72)** [4]	**28.89 (6.90)** [14]	28.78 (6.21) [21]
Both biological parents family	10	54	6	16	**54**	**32**	86
Single parent family	9	20	6	8	**20**	**23**	43
Reconstituted family	2	8	0	2	**8**	**4**	12
Ethnicity: White British	15	69	8	20	**69**	**43**	112
Ethnicity: BME	6	14	4	7	**14**	**17**	31
PDI scores							
Mean Clicked (SD)	4.29 (1.98)	4.37 (1.54)	4.75 (1.91)	4.30 (1.44)	**4.37 (1.54)**	**4.38 (1.72)**	4.38 (1.61)
Mean Not Clicked (SD)	4.81 (1.89)	5.30 (1.81)	4.50 (2.02)	4.48 (2.46)	**5.30 (1.87) ***	**4.60 (2.16) ***	5.01 (1.99)
Mean Joy (SD)	3.19 (1.44)	3.86 (1.73)	3.75 (1.96)	3.26 (1.48)	**3.86 (1.73)**	**3.33 (1.56)**	3.64 (1.67)
Mean Pain or difficulty (SD)	3.38 (1.72)	4.17 (1.77)	3.50 (1.57)	3.89 (1.58)	**4.17 (1.77)**	**3.63 (1.62)**	3.94 (1.72)
Mean Angry (SD)	4.40 (2.28) [2]	4.78 (1.95)	3.25 (2.34)	4.22 (2.14)	**4.78 (1.95) ***	**4.08 (2.23) *** [13]	4.49 (2.10) [20]
Mean Global Score (SD)	4.52 (1.47)	4.75 (1.39)	4.17 (1.53)	4.48 (1.48)	**4.75 (1.39)**	**4.43 (1.47)**	4.62 (1.42)
Expressed emotion							
Mean Warmth (SD)	1.14 (0.79)	0.98 (0.86)	0.83 (0.58)	0.89 (0.85)	**0.98 (0.86)**	**0.97 (0.78)**	0.97 (0.82)
Mean Criticism (SD)	1.43 (0.87)	1.35 (0.83)	1.33 (0.78)	1.00 (0.68)	**1.35 (0.83)**	**1.22 (0.78)**	1.29 (0.81)

Note: EE Warmth is reversed scored, where high scores represent low levels of warmth

(continued overleath)

Variables	Avoidant Attachment (A) n =21	Secure attachment (B) n =83	Ambivalent attachment (C) n = 12	Disorganised attachment (D) n=27	**Secure attachment n = 83**	**Insecure attachment n = 60**	Whole Sample (N = 143)
DASS Scores							
Mean Mood & Feelings Depression (SD)	5.73 (5.58) [2]	3.82 (3.75) [5]	2.91 (2.51) [9]	3.50 (3.56) [12]	**3.82 (3.75) [5]**	**4.19 (4.35) [15]**	3.98 (4.00) [22]
Mean Moods & Feelings Anxiety (SD)	2.93 (4.02) [2]	2.76 (3.46) [5]	1.38 (1.63) [9]	1.84 (3.29) [12]	**2.76 (3.46) [5]**	**2.15 (3.35) [15]**	2.51 (3.41) [22]
Mean Mood and Feelings Stress (SD)	7.70 (5.36) [3]	6.38 (4.18) [5]	4.45 (2.88) [9]	5.25 (3.75) [12]	**6.38 (4.18) [5]**	**5.95 (4.38) [16]**	6.20 (4.25) [23]
BPI scores							
Mean Positive affect (SD)	5.65 (1.16) [2]	5.30 (1.11) [6]	4.96 (1.29)	5.62 (1.28) [10]	**5.30 (1.11) [6]**	**5.49 (1.25) [17]**	5.38 (1.17) [24]
Mean Negative affect (SD)	5.39 (1.20) [2]	4.78 (1.10) [6]	4.46 (1.02)	4.58 (1.46) [10]	**4.78 (1.10) [6]**	**4.84 (1.34) [17]**	4.80 (1.20) [24]
PACS scores							
Mean attention & activity (SD)	0.90 (0.41)	0.89 (0.59)	0.85 (0.55)	0.84 (0.52) [10]	**0.89 (0.59)**	**0.86 (0.48) [13]**	0.88 (0.55) [20]
Mean disruptive behaviour (SD)	1.30 (0.47)	1.35 (0.39)	1.22 (0.53)	1.31 (0.55)	**1.35 (0.39)**	**1.29 (0.51)**	1.33 (0.45)
Eyberg scores							
Mean Eyberg Intensity Score (SD)	131.65 (26.89) [2]	132.47 (28.51) [7]	119.47 (33.27)	131.35 (34.96)[12]	**132.47 (28.51) [7]**	**128.91 (31.73)[18]**	131.0 (29.84) [25]
Mean Eyberg Problem Score (SD)	13.29 (7.50) [3]	14.57 (7.75) [8]	12.04 (10.29) [9]	13.70 (9.25) [3]	**14.57 (7.75) [8]**	**13.17 (8.70) [19]**	13.98 (8.15) [26]
SDQ							
Mean Parent Pro social (SD)	7.20 (1.58) [2]	7.43 (1.88)	7.83 (1.85)	7.59 (1.95)	**7.43 (1.88)**	**7.51 (1.79) [13]**	7.46 (1.84) [20]
Mean Parent Peer problems (SD)	2.20 (2.24) [2]	2.14 (1.80)	3.00 (2.41)	2.15 (2.14)	**2.14 (1.80)**	**2.34 (2.22) [13]**	2.23 (1.98) [20]
Alabama Parenting Questionnaire							
Mean All positive parenting (SD)	25.92 (3.47) [3]	26.26 (2.77) [27]	26.83 (3.07)	26.96 (2.29) [12]	**26.26 (2.77) [27]**	**26.57 (2.90) [15]**	26.39 (2.81) [25]
Mean All negative parenting (SD)	16.12 (4.22) [3]	16.68 (3.85) [27]	18.83 (3.56)	17.30 (4.67) [12]	**16.68 (3.85) [27]**	**17.23 (4.33)[15]**	16.91 (4.05) [25]

Note: [1] (n=18) [2] (n=20) [3] (n=19) [4] (n=72) [5] (n=76) [6] (n=80) [7] (n=77) [8] (n=67) [9] (n=11) [10](n=26) [11] (n=23) [12](n=24) [13](n=59) [14](n=52) [15](n=55) [16] (n=54) [17] (n=58) [18] (n=56) [19] (n=49) [20] (n=142) [21] (n=124) [22](n=131) [23](n=130) [24](n=138) [25] (n=133) [26] (n=116) [27] (n=78)

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

Full Correlation Matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1. PDI Clicked	1.00																				
2. PDI Not clicked	.343**	1.00																			
3. PDI Joy	.311**	.262**	1.00																		
4. PDI Pain	.321**	.190*	.368**	1.00																	
5. PDI Angry	.307**	.367**	.211*	.287**	1.00																
6. PDI Global	.626**	.637**	.488**	.555**	.698**	1.00															
7. EE Warmth	-.077	-.060	-.125	-.066	-.147	-.190*	1.00														
8. EE Criticism	.082	.034	-.076	-.049	.099	-.023	.318**	1.00													
9. BPI Warmth	.048	-.191*	.063	.105	-.203	.042	.006	.005	1.00												
10. BPI Anger	-.136	-.186*	-.002	-.025	.006	-.144	.083	.084	.259**	1.00											
11. Eyeberg Intensity	.010	.008	.031	.135	.113	.054	.333**	.401**	.066	.044	1.00										
12. Eyeberg Problem	-.002	.095	-.084	-.016	.065	.053	.299**	.306**	-.041	-.091	.781**	1.00									
13. sqrtMFQ Depression	.024	.080	-.034	-.111	.090	.013	.220**	.125	-.077	.090	.186*	.103	1.00								
14. sqrtMFQ Anxiety	.010	.104	.018	.011	.113	.062	.172*	.088	-.090	.043	.156	.137	.616**	1.00							
15. sqrtMFQ Stress	.094	.141	-.010	.024	.179*	.135	.212*	.131	-.102	.094	.237**	.181	.696**	.700**	1.00						
16. PACS Attention & activity	.065	.086	-.119	.110	.117	.091	.079	,200*	-.004	-.015	.424**	.333**	.262**	.146	.214*	1.00					
17. PACS Disruptive	.020	.007	-.026	-.036	.081	.034	.209*	.332**	.031	.052	.566**	.479**	.336**	.254**	.328**	.406**	1.00				

behaviour																				
18. sqrtSDQ Peer problems (parent)	-.015	-.020	-.037	-.070	-.205*	-.163	.224**	.115	-.030	-.053	.174*	.331**	.096	.175*	.097	.201*	.199*	1.00		
19. SDQ Pro social (parent)	-.099	-.048	-.121	-.102	-.177*	-.180*	-.182*	-.258**	-.114	-.079	-.254**	-.229*	-.094	-.038	-.135	-.169*	-.284**	-.174*	1.00	
20. reflectsqrt Alabama positive parenting	.018	-.152	-.016	-.141	-.082	-.120	-.067	-.065	.042	.044	-.102	-.076	-.321**	-.197*	-.309**	-.144	-.167	.088	.090	1.00
21. sqrtAlabama negative parenting	-.105	-.075	-.080	-.142	-.298**	-.230**	.103	.044	-.067	-.105	.264**	.327**	.205*	.290**	.201*	.163	.215*	.099	.019	-.216**	1.00

Appendix F: HCA Study Protocol

KING'S College LONDON
University of London

Helping Children Achieve: A randomised controlled trial of parenting groups to enhance child relationships and literacy (The HCA study).

Original trial ethics number CREC/07/08-134 – Revised ethics number PNM/10-118 Trial number ISRCTN53662728

Revised Protocol: June 2010

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Overview:
Behavioural and learning disorders in children tend to go hand-in-hand, however, little is known about how treatments for behavioural difficulties affect children's literacy, and vice versa. There have been very few trials of parenting programmes that address both behaviour and literacy. The current trial uses a randomised controlled design in which the interventions (Behavioural Parent Training and Literacy Training) are compared in four treatment groups: 1) BPT alone, Lit alone, BPT and Lit combined; and a Control group. This allows us to evaluate main and synergistic effects of the two interventions. The staff will be highly trained (although locally employed to allow replicability) and the children will be selected to have moderate to marked antisocial behaviour.

Aims

1. **Effect on child outcomes:** The chief aim is to evaluate the effects of the two treatment components separately and combined on child literacy and behaviour.

2. **Suitability for children with differing needs**: The second aim is to assess the effects of the programmes across various levels of conduct problems and reading problems in children, that is, to assess whether various forms of co-occurrence or co morbidity moderate the process of change.
3. **Mechanisms of change**: The third aim is to assess what the essential 'active' ingredients of the programmes are in terms of changes in parent and child behaviours in the domains of literacy and conduct problems and how these interact and influence each other across time.
4. **Suitability for community dissemination**: Finally, we will assess the total and relative social acceptability, reach, and cost-effectiveness of the various treatment components.

Methods/Design

Participants

Population screens of primary school classes (Year 1 and 2 ; age 5-7 years) are being conducted in Hackney and Plymouth to identify children at risk for long-term antisocial behaviour, and thus, for poor academic outcomes and social exclusion. Teachers and parents are asked to complete the SDQ conduct problems subscale (Goodman, 1997; 2001), as well as the eight items of DSM-IV criteria for oppositional-defiant disorder; the peer and pro-social scales are also completed but not used as a selection criteria. 240 children (60 per arm) with conduct problem scores from teachers and/or parents in the highest 15% of the study population, using either measure, will be defined as 'at higher risk' for antisocial behaviour. Studies show that this level of cut-off indicates children at higher risk for short and long-term difficulties (e.g. see Fergusson, Horwood, & Ridder, 2005). Participants are only included if they are above the cut-off for the screen according to the parent or teacher report and reach the cut-off on the PACS score of oppositional defiant behaviour of .7 (Taylor et al, 1991).

All families with children defined as 'at higher risk' by the screen according to parent or teacher report are invited to participate, with the exception of parents who are not fluent in speaking English, or children with clinically obvious global developmental delay, or who have a statement of Special Educational Needs on the grounds of generally delayed development, or who on testing have an IQ <70. Parents are told that the reason they have been invited to take part is because they and/or their child's teacher have indicated in their answers to the questionnaire that they have concerns about their child's behaviour and they are therefore being invited to participate. Participating families are randomly assigned to one of the support programmes.

Screen

Teachers and parents complete three sub-scales of the Strengths and Difficulties Questionnaire (SDQ: Goodman, 1997): conduct, peer and pro-social, supplemented by the 8 DSM IV oppositional defiant disorder questions (Conners, 1997). Children whose scores indicate that they could be at risk of anti-social behaviour on either the conduct score: ≥3 or the DSM score ≥5 are invited into the trial, if this is reported by the parents or teachers as a problem with the proviso that the parentis happy and has themselves completed a questionniare. These scores are validated by an interview

with the parent using the PACS oppositional defiant questions, where a cut-off of .7 will be used.

Referrals

In addition to the data collected by the screen, families will be able to refer directly to the study or after discussions with teachers or parent support advisers. There will be posters, advertisements and letters explaining the study sent to all schools in Hackney and Plymouth. Referrals may also come direct from the Early Intervention Parent Partnership in Hackney and the Parent Partnership in Plymouth with the consent of parents. The same criteria will apply to the inclusion of direct referrals, the screening questionnaire will be completed and the children will need to have a score on the conduct score: ≥3 or the DSM score ≥5.

Assessments

A multi-method, multi-informant approach is taken. Parents and children are given questionnaires, semi-structured interviews, and are directly observed, to assess family history, parenting approaches, parent and child psychopathology, behaviour problems, parent-child interaction, family discord, verbal IQ, and reading abilities. Teachers also complete questionnaires. These full assessments will be repeated at two time points: Time 1 (Pre), before starting intervention, Time 2 (Post), within 9-11 months of pre-assessment and Time 3 (Follow-up), a year after the post intervention was completed. In addition there are two additional assessments made during the intervention after 6 weeks and after the intervention after 12 weeks: these additional assessment time points are to assess the factors that change first and include a reduced assessment framework

Interventions

The study investigates the extent to which behaviour and literacy problems can be ameliorated through: a) a literacy-based intervention programme that helps parents support their child's reading; b) a well-established parenting intervention programme that targets behaviour; c) a programme which combines these two programmes; d) a signposting service that provides parents with information about where to get help. Participating families will be randomly assigned to these four programmes.

a) Literacy-Based Intervention Programme: The SPOKES literacy programme is a manualised programme devised by Professor Kathy Sylva, Ms Carolyn Crook and Professor Stephen Scott (Sylva & Crook, 2000).

b) Parenting Intervention Programme: The Incredible Years Parent Group programme (Webster-Stratton, 1989; Webster-Stratton et al., 2004) aims to help parents build better relationships with their children and develop skills to manage difficult child behaviour effectively, using social learning, and cognitive behavioural and systemic principles. The intervention lasts 12 weeks, each session is two hours.

c) Combined Programme: Families allocated to the combined programme will be offered the behavioural intervention followed by the literacy intervention; the total number of sessions offered will thus be 24.

d) Signposting and Information service

The comparison group participates in a Signposting and Information service. Evidence supports the efficacy of such less intensive, information based interventions (e.g., Sanders, Markie-Dadds, Tully, & Bor, 2000; Sanders, Montgomery, & Brechman-Toussaint, 2000; Sutton, 2001), can bring about substantial and significant change. Additionally, the parents will be provided with a telephone helpline informing them how to get in touch with local mental health services should they wish.

Data and Analyses

The HCA trial is designed and will be reported according to the guidelines of the Consolidated Standards of Reporting Trials (CONSORT; Moher, Schulz, & Altman, for the CONSORT Group, 2001). From the initial population screen and throughout recruitment, attrition will be carefully tracked at every stage. Patterns of drop-out will be analysed and the appropriate missing data strategies will be adopted. The sample size for the trial is designed so as to have sufficient statistical power (80%) to detect moderate effect sizes at the level of $p< 0.05$. It is possible that some of the variance in the HCA outcome variables will be attributable to school and parenting group clustering. Analyses of this clustering will be conducted using hierarchical linear modelling and where necessary, hierarchical clustering of variance effects will be factored in for further analyses. MANOVAs will be used to assess main outcome effects. In addition, potential moderation and mediation will be investigated using structural equation modelling.

The final analysis of the outcomes of the trial will be based on those subjects who have attended at least one session of the intervention, and those in the control group, an "efficacy trial". Cross sectional analyses will be carried out on the data collected on all subjects including those who choose not to participate in the interventions.

Data Protection

The HCA has its own data protection protocol drawn up in adherence with King's College London guidelines.

Data management

Administrative and confidential information will be entered into a confidential web-based system that will be accessible from all the sites in the project. All other questionnaire, observational and interview data will be entered into SPSS and these files will also be available from the web based system, but there will be a protected status to this data, only allowing certain "super users" to make alterations.

Data checking

There is a variety of mechanisms for checking data. Data are checked by the individual worker prior to entry. Data are checked by the data entry person and any missing data chased up and data errors checked. Given the pressure of work it is important that data is monitored and any areas that need further training are identified. The level of skill of the people doing the data entry is important as they need to make a judgement on which issues need further discussion, so they need to be familiar with the measures.

Data entry
Data will be entered into a combination of a) the web based data system and b) SPSS files for the specific measures which will also be uploaded onto the web based data system. This data is protected as it is not possible for identifying information to be downloaded and the data is entered according to ID rather than name. To protect the data further although all research workers can download the data; only super users are allowed to upload any changes to the data. All measures in the trial are checked for accuracy and key measures will also be entered twice to check for errors. For the remainder of the data there will be a system of checking 10% of the data.

Coding
As there are a number of observational measures these will be coded by a combination of members from the coding team and the two research teams. Each member from a research team is/will be asked to learn to implement one observational coding scheme. Each member of the coding team is asked to implement two observational coding schemes. In general, the training comprises three days of initial training. The staff will be asked to learn these categories and to practise coding the observational interviews. Each week, the coders will attend a group meeting to group code some interviews and discuss any problems that they have encountered.

Once the coders can competently apply the codes to the behaviours, their reliability will be assessed. In coding, observer reliability is defined as 'the degree to which observers' code behaviour in accordance to some predefined criteria' (Patterson, 1982 page 49, line 27). The coder's agreement with the gold standard interviews will be assessed by calculating Interclass Correlation Coefficients (ICC). An ICC score of 1 means that the coder is in complete agreement with the gold standard, scores between 0.60 and 0.79 are considered to be in substantial agreement, and an ICC score of 0.80 or above represents outstanding agreement. To be certified as a reliable coder an ICC score above 0.60 must be achieved. To ensure reliability is maintained, the coders will attend monthly meetings where they will examine any coding problems that they have experienced. In addition, a random selection of 20 percent of the data will be double coded and any discrepancies will be highlighted and discussed.

Ethical Approval
Ethical approval was sought at the outset of the trial, however in July 2008 there was substantial alteration to the trial and to the measures used, so revised ethical approval has also been sought to reflect this and was granted on the 28.5.10. Full details of the ethical approval are found on the R drive or on the new web based system. The informed consent of the participants is sought prior to the start of the trial and there is an undertaking of the process for protecting their confidentiality in terms of data storage, accessibility etc.

Significance and outputs
The results of this trial will be disseminated throughout the scientific, practitioner, and public communities. This will be achieved through publication in high profile journals, academic and non-academic conference presentation, and easily comprehensible press releases on key findings.

Appendix G1: Manchester Child Attachment Story Task

MCAST INSTRUCTIONS

1. FAMILY PICTURE (OPTIONAL)

- Pencil and paper.
- "Show me / draw me who's in your family".

2. SET OUT TOYS AND CHOOSE DOLL

The child is offered a range of figures from which to choose a 'child-doll' and a 'carer-doll'. It is important that identification is made between 'child-doll' doll and child; and between 'carer-doll' and the child's carer. The 'child-doll' should be called by the same name as the child.

3. INTRODUCING THE STORIES

"What we're going to do is this. Firstly I'm going to tell you the beginning of a story with you and (mummy/daddy/other carer) in it. Then when we get into the story I'm going to ask you to show me with the dolls what happens next.

4. CONTROL VIGNETTE – BREAKFAST

The aim of this vignette is to familiarise the child with the procedure. It will also give incidental information about home structure, parenting style and characteristic child reaction patterns. It allows the baseline coding (see manual).

The Parent doll and child doll are in bed asleep. The alarm goes off in parent' room – parent doll gets up and goes down stairs to start with the breakfast. Then calls up to the child doll "Time to get up…"

Questions: What happens next?
Whats child doll thinking, whats child doll feeling?
Whats mummy doll thinking, whats mummy doll feeling?

5. **TEST VIGNETTES.**

- ***VIGNETTE 1 – NIGHTMARE***

It's night time and here (child doll) and (carer doll) are in bed asleep.

Child can help you place the dolls where he/she thinks they should be.

It's in the middle of the night and everyone is fast asleep very quiet. Everything is very dark.

Then suddenly X doll wakes up (act this out with the doll).

She says oohh.. I've had a horrible dream… oohh..horrible dream. And she starts to cry and she says ..oohhh…horrible dream…

Repeat questions

- ***VIGNETTE 2 – HURT KNEE***

For this story it's daytime and (carer doll) is inside the house – what do you think s/he's doing there?

Child can help place the parent doll as they see fit

X doll is outside playing in the garden. What does X like to play – what would he be playing?

OK (whatever it is – act it out – say football) *He's playing football in the garden running around – kicking it here and there* (room for creativity as the game is set up but not too elaborate and not allowing involvement of anyone else)

He's running along and suddenly …oohh. he falls over …and … "oowww!" he's hurt his knee and he looks down and he sees it's bleeding … and it hurts .. and he says "oowww my knee's hurt…"

Repeat questions

- ***VIGNETTE 3 – ILLNESS***

In this story X dolls is at home watching TV. What's your favourite TV programme? X is watching that. (Carer doll) is in the next room – where do you think s/he is?

Suddenly X has a pain in the tummy. And it gets worse and she says "oohhh…I've got a pain in my tummy oowww it's getting worse" And she feels her tummy – it's a horrible pain. "Oowww"

Repeat question

- ***VIGNETTE 4 – SHOPPING***

  In this vignette, the child finds him or herself separated from mother in a crowd while shopping. To set up the vignette the dolls' house is taken away and furniture from the house or other props are used to create a shopping centre with buildings and streets. This only has to be schematic. The essential requirement is that it needs to be possible for the child not to be able to see the mother doll at the trigger point of the vignette. From experience, during this vignette, it is best not to identify shops specifically during the story. In particular, do not identify sweet shops since this introduces some powerful conflicting themes!

  In this story, X doll and (carer doll) are going shopping. Here they go into the shopping centre and look at all the shops and there are lots of people around and they have to hold on tight to each other. They look in this shop here and this shop here. X doll is looking in this shop here……

  At this point, show the child looking at a shop window and then take the carer doll around to another place that is out of sight of the child doll and leave her there.

  And X doll looks around with all the people there and she can't see her (carer) and there are all the people around but (carer) is not there. She looks around and can't see her ….. Then she feels very scared and she says "where's my (carer), where's my (carer)…."

  Repeat questions

- ***CLOSURE VIGNETTE (FAMILY TRIP)***

  This final story should not relate to attachment themes but is a closure story. The child can suggest a typical family trip that the family would do together. Other family members can be brought on to the scene and the child can act out a typical trip. It is valuable if the child is allowed to play naturally for some time until there seems a natural closure. During this phase, the examiner should not be rating but should be ordinarily responsive to the child and encouraging of them. The examiner, thus at this point, steps out of the role that they have maintained through the rest of the interview.

Appendix G2: The Five-Minute Speech Sample (EE coding)

EE coding Manual- Summary

Overall Scales for Warmth

Ratings should be based on:

8.1.1 **Tone of Voice, Expression and Gesture** when Speaking about the Child. Be alert for **enthusiasm shown** when talking about the child and also for **changes in manner and tone** when the parent switches from talking about neutral subjects to talking about the child. **Flatness or coldness** of tone should be regarded as evidence of lack of warmth and balanced against any evidence of more positive affects.

8.1.2 Expressions of **warmth which occur spontaneously** should incline one toward a higher rating. **Failure to express warmth where direct opportunities** for this are provided should tend to lower the rating

8.1.3 The degree to which the informant tends to put himself in to the shoes of the child **(empathy), sympathy** and **concern**. Concern should be for the well being of the child as a person, not anxiety of the effects the child has on other people.

8.1.4 **Interest in the Child as a Person**. It is important that the interest be in relation to the child as a person, not just satisfaction with regard to an accomplishment. **Expressed enjoyment of the child's company** is particularly good evidence of warmth.

8.1.5 **Factors which are Not Relevant to Warmth Rating:**

- **Inferences about 'felt' warmth.** the coder should be concerned only with **actual expressions of warmth**
- **Warmth of the Informant's Personality.** a person with a warm personality will not necessarily show that warmth towards the child
- **Depression** should not influence ratings
- The presence or absence of **criticism or hostility** should not affect the warmth rating. Frequent criticism is compatible with moderate warmth. *E.g. Parents with ambivalent attitudes may well express rejection of their child at one point of the interview while expressing warmth at other points.*
- **Positive Remarks** might not necessarily be said warmly. It is quite possible for an informant to give a detached clinical account of the child's behaviour and personality and to include in this description a number of clearly positive remarks which are fair rather than warm.
- ***Stereotyped Endearments*** such as 'dear' or 'darling' are not relevant and should not be considered as evidence for rating warmth.

Overall Scales for Criticism

Ratings should be based on:

8.2.1 **Critical tone of voice**. Disregard content if tone is sarcastic. E.g. "Oh yeah, he's always a little angel" is positive in content but said sarcastically it can be critical.

8.2.2 **Content**. If the parent's statement is clear that they dislike or disapprove of the child/child's behaviour or make rejecting remarks.

N.B. **Do not compensate for flatness of tone** by lowering standards. This should be particularly remembered when coding an interview with a depressed parent. The ratings refer only to the feelings shown by the informant and not to the feelings felt by them.

8.2.3 **Critical Remarks**. There are points where the parent is invited to make criticisms of the child – e.g. when asked what they like least about their child. Because these are leading questions **the answers to them must contain a clearly critical tone** in order for the remarks to be rated as critical.

Appendix G3: The Parent Development Interview

INTERVIEW SECTION IVb: VIEW OF THE RELATIONSHIP

1) Now I'd like you to choose <u>three</u> words that tell about your relationship with *(child's name)*. (Pause while they list). Now let's go back over each word like we did before – Please can you give me a specific experience, particular incident or time for ----? (Go through and get a specific memory/experience for each word.)

2) Describe a time in the last week when you and *(child's name)* really 'clicked' (got on well). (Probe if necessary: can you tell me more about the incident? How did you feel? How do you think *(child's name)* felt?

3) Now describe a time in the last week when you and *(child's name)* really weren't 'clicking' (didn't get on well). (Probe if necessary: Can you tell me more about the incident? How did you feel? How do you think *(child's name)* felt?

4) Are there any experiences in *(child's name)* life that you feel were particularly difficult or challenging for him/her? If parent is being vague in their response, ask (what was particularly difficult or challenging about that?)

SECTION V: AFFECTIVE EXPERIENCE AS A PARENT

1. Now I'd like to talk to you about your feelings about being a parent. What gives you the most joy in being a parent?

2. What gives you the most pain or difficulty in being a parent?
   (What do you find hard about being a parent?)

3. Do you ever feel angry as a parent? (Probe if necessary: What kinds of situations make you feel this way? How do you handle your angry feelings?

4. When you worry about (your child), what do you find yourself worrying most about?

5. How confident are you that you will be able to soothe her/him when s/he is upset? How do you do it? (i.e. with contact, proximity, communicating across a distance.)

6. What is he/she really good at?

Thank you so much for telling me all about X and your relationship with him and his/her behaviour. You've told me that X has lots of positive qualities such as….. I'm impressed about all the thoughts you put into the upbringing of your child.

Appendix G4: The Strengths and Difficulties Questionnaire

Strengths and Difficulties Questionnaire

For each item, please mark the box for Not True, Somewhat True or Certainly True. It would help us if you answered all items as best you can even if you are not absolutely certain or the item seems daft! Please give your answers on the basis of the child's behaviour over the last six months or this school year.

Child's Name ..... Male/Female

Date of Birth.....

	Not True	Somewhat True	Certainly True
Considerate of other people's feelings	☐	☐	☐
Restless, overactive, cannot stay still for long	☐	☐	☐
Often complains of headaches, stomach-aches or sickness	☐	☐	☐
Shares readily with other children (treats, toys, pencils etc.)	☐	☐	☐
Often has temper tantrums or hot tempers	☐	☐	☐
Rather solitary, tends to play alone	☐	☐	☐
Generally obedient, usually does what adults request	☐	☐	☐
Many worries, often seems worried	☐	☐	☐
Helpful if someone is hurt, upset or feeling ill	☐	☐	☐
Constantly fidgeting or squirming	☐	☐	☐
Has at least one good friend	☐	☐	☐
Often fights with other children or bullies them	☐	☐	☐
Often unhappy, down-hearted or tearful	☐	☐	☐
Generally liked by other children	☐	☐	☐
Easily distracted, concentration wanders	☐	☐	☐
Nervous or clingy in new situations, easily loses confidence	☐	☐	☐
Kind to younger children	☐	☐	☐
Often lies or cheats	☐	☐	☐
Picked on or bullied by other children	☐	☐	☐
Often volunteers to help others (parents, teachers, other children)	☐	☐	☐
Thinks things out before acting	☐	☐	☐
Steals from home, school or elsewhere	☐	☐	☐
Gets on better with adults than with other children	☐	☐	☐
Many fears, easily scared	☐	☐	☐
Sees tasks through to the end, good attention span	☐	☐	☐

Signature ..... Date .....

Parent/Teacher/Other (please specify:)

Thank you very much for your help

Appendix H: Dissemination Strategy

The following dissemination strategy will be implemented to ensure that all relevant parties are informed of the findings of this research study.

The University of Exeter Doctorate in Clinical Psychology
This dissertation will be submitted as part of the requirements of the programme.

Sources of Recruitment
Following the viva and corrections, results from this study will be shared with the research team of the HCA multi-centre trial and their procedure for dissemination of results to participants will be followed.

The wider academic and clinical community
The findings will also be presented to trainee clinical psychologists, staff and other interested parties at Exeter University in June 2013. It is intended that the findings of this study will be submitted for publication and the paper will be sent to the Journal of Child and Adolescent Mental Health Journal for peer review. Results will also be presented at a relevant conference when appropriate.