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University  
of Glasgow

Indiscriminate friendliness in maltreated children: the  
importance of emotional availability

AND

Clinical Research Portfolio.

**VOLUME I**

**(Volume II bound separately)**

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Matriculation number: 0503232

October 2014

**Mental Health and Wellbeing  
College of Medical, Veterinary, and Life Sciences**

*Submitted in part fulfilment of the requirements for the degree of Doctorate in Clinical  
Psychology.*



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## Chapter 1: Systematic Review

Factors associated with indiscriminate friendliness in maltreated children.

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Prepared in accordance with guidelines for submission to *Infant Mental Health Journal* (see appendix 1.1)

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## **Abstract**

Background: Indiscriminate friendliness (IF) has been found in maltreated children and refers to a willingness to approach or interact with strangers in an overly friendly manner. The term maltreatment refers to “pathogenic care” that has resulted in or been a consequence of a child being accommodated and subsequently looked after by the state. This risky behaviour is distinct from attachment insecurity and, unlike attachment insecurity, has been found to persist when care-giving quality improves. A previous review suggested that care-giving quality is not associated with IF. The aim of this review was to evaluate the factors associated with IF and whether quality of care-giving is important.

Method: Four databases were searched and citation searches were completed for all articles found. Hand searches of pertinent journals and reference lists of obtained articles were explored. Ten articles were subsequently reviewed using the Downs and Black (1998) Checklist for randomised and non-randomised studies.

Results: Overall quality was high. Results showed that IF is prevalent in foster care as well as post-institutionalised children. Attachment security was not associated with IF. Length of time in institution was associated with IF, as was inhibitory control, which moderated the association between IF & number of care-givers. Genetic factors predispose children to IF and may impact on its persistence. Quality of care-giving was also associated with IF and emotional availability (EA) predicted IF. Limitations across studies included heterogeneity in IF measurement and unreliable measures of pre-adoptive care.

Conclusions: Post-care parenting may be a useful target for intervention. Future research should focus on developing a standardised measure of IF, as well as evaluating a parental intervention.

**Keywords: Indiscriminate friendliness, Disinhibited Social Engagement Disorder, Reactive Attachment Disorder, Quality of Care.**

## **Introduction**

Reactive Attachment Disorder (RAD) refers to patterns of aberrant social behaviours that are markedly disturbed and developmentally inappropriate. Failure to initiate or respond to social interactions is a core characteristic of the 'inhibited/withdrawn' form of RAD, whereas the 'disinhibited' form is characterised by indiscriminate friendliness (IF); a willingness to approach or interact with strangers in an overly friendly manner. The literature has supported the distinction of these subtypes, and the recent revised publication of the Diagnostic and Statistical Manual of Mental Disorders, fifth edition (DSM-V, American Psychiatric Association; APA, 2013) concluded that RAD be separated into two distinct disorders: RAD (formerly the inhibited form) and Disinhibited Social Engagement Disorder (formerly the disinhibited subtype).

Both disorders reportedly result from pathogenic care, a persistent neglect of the child's basic emotional or physical needs or repeated changes in primary caregiver that prevents the formation of a discriminatory attachment. Indeed both the International Classification of Diseases-10 (WHO, 1992) & DSM-V (APA, 2013) specify that the aetiology of these disorders is poor care giving. There are a number of problems, however, differentiating a pathway specific to RAD, given the same risk conditions for disorders that are also associated with maltreatment.

Zeanah & Smyke (2008) reviewed the literature pertaining to both subtypes. Of particular interest, is that RAD is prevalent in both institutionalised and non-institutionalised (fostered) populations (Chisholm, 1998); that indiscriminate friendliness is distinct from, and less amenable to change than, attachment security/organisation (Chisholm, 1998); and that the indiscriminate subtype is not associated with care giving quality (Zeanah & Smyke, 2008). This final finding seems contrary to the diagnostic criterion that specifically focuses on "pathogenic care" (DSM-V, APA 2013). It seems reasonable that if care-giving quality is considered causal, then changes to the environment should result in changes in behaviour. Indeed the term "reactive" implies an effect of circumstance (WHO, 1998). A possible explanation for this finding is methodological differences in how IF is defined and measured. Zeanah & Smyke (2008), however, suggest that there is convergence amongst differing definitions as well as convergent validity between carer report and behavioural measures of IF. The authors do not provide an explanation as to why IF is not associated with care-giving quality other than to suggest that it may provide a rationale for the robust nature of indiscriminate friendliness.

Minnis et al (2006) provide another possible explanation for the robust nature of IF. They suggest that the desire to form attachments reflects an evolutionary drive, given its importance for survival, and that because of inconsistent care giving; these children seek interactions “at all costs”. Thus, despite being able to develop a preference for a single attachment figure, these children continue to be haphazard in their displays of affection (Chisholm, 1998). This theory, whilst drawing upon evolutionary explanations, also relies upon the quality/availability of care-giving as a salient factor. What remains unclear is the role of care-giving quality in the persistence or amelioration of IF.

In another review by Coleman (2013), it is suggested that a dynamic conceptualisation of RAD could aid understanding of aetiological and maintaining factors. Coleman (2013) moves from considering a unitary concept such as parenting to the dynamic interaction of carer and child; that the child’s responses may impact on care-giving quality and vice versa. This theory is again focused on the care-giving context and is contrary to the findings by Zeanah & Smyke (2008,) which suggest that care-giving quality is only associated with the inhibited subtype. Coleman’s (2013) review is more recent, however, and adds a dynamic aspect to the literature. She captures relational aspects that may be important in the development and maintenance of IF. It is however unclear, whether the evidence base supports this theory. Further to this dynamic concept, Zeanah & Fox (2004) suggest that child temperament may add to our understanding of disorder-specific pathways; that what the child “brings” to interactions may be salient. Again, it is unclear whether the literature supports this theory.

There are questions that remain unanswered with regards to the aetiology and maintenance of IF. Given the concerns with regards to risk for children who present with these difficulties (Kocovska et al, 2012), it seems important to review the literature and summarise recent findings.

#### Aims:

This systematic review aims to provide an updated summary of the literature regarding indiscriminate friendliness in maltreated children. Of particular interest is the role of the care-giving context and what aspects of this (if any) are important. It also seems reasonable to explore ‘other’ factors e.g. dynamic aspects and/or child-specific factors that might be associated with IF, in order to disentangle the conditions that give rise to this risky behaviour.

#### Research Questions:

- What factors are associated with indiscriminate friendliness in maltreated children?

- Is care-giving quality related to indiscriminate friendliness in maltreated children and, if yes, which aspects are important?

## **Method**

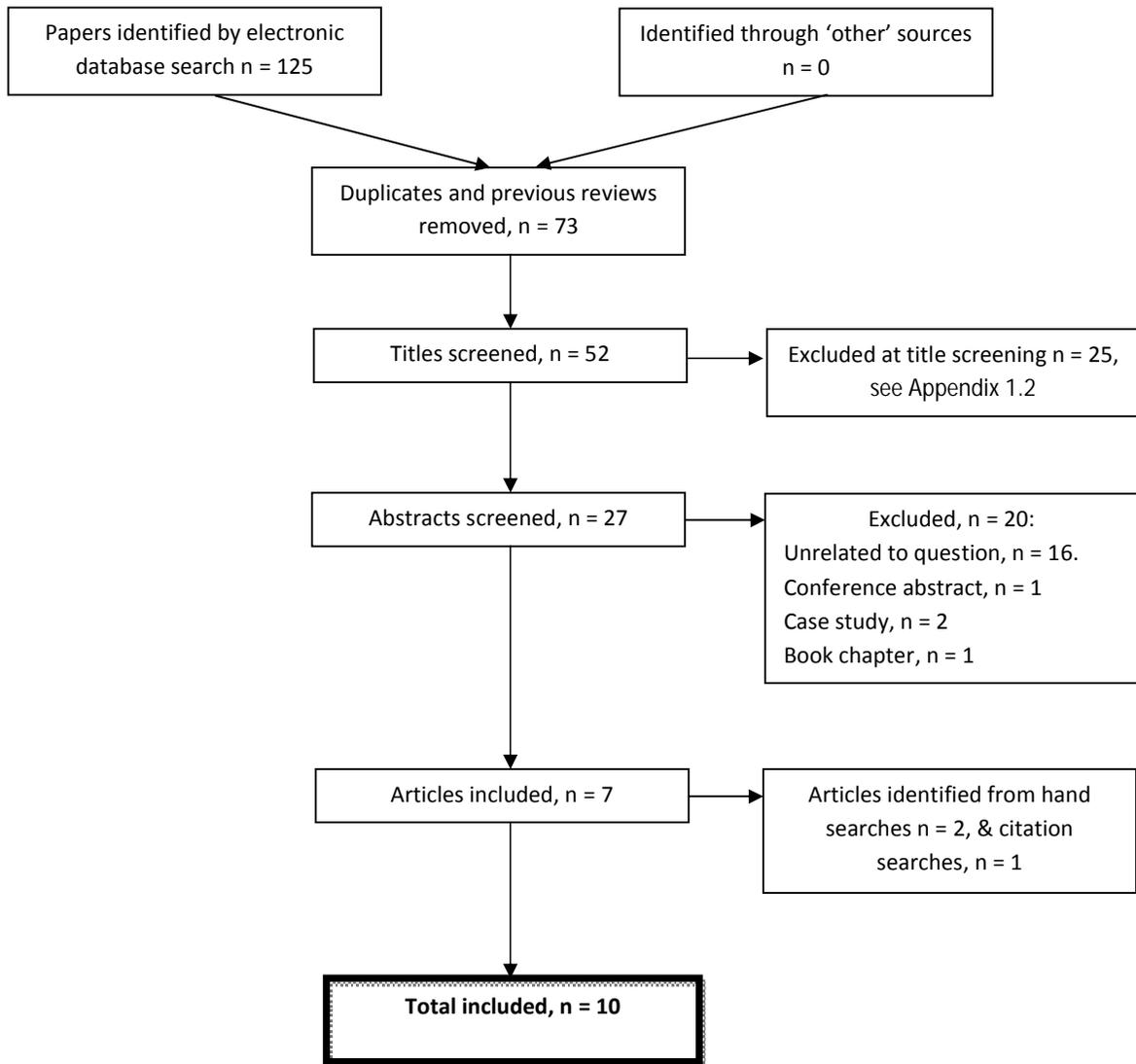
Search Strategy:

An electronic search of the following databases was conducted: Medline, Embase, Psychinfo and Web of Science. Searches were limited to papers published in English and after 2006 (to avoid replicating the findings of Zeanah & Smyke, 2008). Search terms were developed in consultation with the University of Glasgow librarian and the following terms were used: Indiscriminate Friend\* or Reactive Attachment Disorder or Soc\* Indiscrimin\* Behav\* AND maltreat\* or child abuse or depriv\* or child-parent rel\* AND residential childcare or foster\* or adoption or orphanage\* or institution\*.

Articles were included if they were published in a peer reviewed journal and explored factors associated with indiscriminate friendliness or RAD (disinhibited subtype). Previous reviews were excluded, as were book chapters and case studies. Qualitative research was also excluded. Unpublished studies were also excluded as it was out with the feasibility of this study to include non-peer reviewed data. Thus, the results of this study only apply to published literature.

Seven papers met the criteria for inclusion and exclusion following the electronic search (see Appendix 1.2). Figure 1 summarises the selection process.

**Fig. 1: Flow Diagram of Search Process.**



A random 20% sample of the abstracts screened were second rated with 100% agreement on whether an article should be included or not. Reference lists of the included articles were then hand searched which yielded a further two papers for inclusion. One other study was identified from citation searches of all the included articles. The journal *Development and Psychopathology* was identified as pertinent and a hand search was conducted but yielded no additional articles. This resulted in a total of ten papers.

## Quality Rating Criteria

According to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (The PRISMA group, 2009) guidelines, the quality of a study should be evaluated according to potential risks of bias. The guidelines suggest using a domain approach that distinguishes common sources of bias that may impact on results. The Downs & Black (1998) checklist (see appendix 1.3) uses a component approach that focuses on the following dimensions: reporting bias, external validity, internal validity, selection bias, and power. This assessment tool can be used for both randomised and non-randomised designs and has high internal consistency as well as good test-retest reliability (Downs & Black, 1998). The checklist was modified for the purposes of this review. Specifically, the scoring for item 27 dealing with statistical power was simplified to a choice of awarding either 1 or 0 points depending on whether the author explicitly stated a concern that power was insufficient. The checklist comprises 27 items, with a maximum score of 28. Papers were considered poor quality if they scored below 14/28 (<50%). Moderate quality scores ranged between 14-20 (50-75%) and high quality scores ranged between 21-28 (>75%) To assess inter-rater reliability an independent reviewer rated 50% of the papers included. Overall agreement was high (95%). Any discrepancies between reviewers were resolved through discussion.

## **Results**

### Design of Studies

Six cohort studies were found, five of these were prospective (Tarullo, Garvin & Gunner, 2011; Rutter et al, 2007; Pears et al, 2007; Van Den Dries et al, 2012; Garvin et al, 2012), and one cross-sectional (Minnis et al, 2007). Two studies were case controls (Bruce, Tarullo & Gunnar, 2009; Johnson et al, 2011); one RCT (Drury et al, 2012), and one quasi-experimental design (Olsavsky et al, 2013). Only Minnis et al (2007) did not include a comparison group. Six studies included follow up (Drury et al, 2012; Tarullo et al, 2011; Rutter et al, 2007; Van Den Dries et al, 2012; Garvin et al, 2012; Pears et al, 2007) that ranged 4 months – 7 years.

### Participants

A total of 14,621 participants were observed across all studies. Minnis et al (2007), who recruited 13,472 participants, skew this number. Gender ratios were not reported for Minnis et al (2007); Pears et al (2009), & Olsavsky et al (2013). Of those that reported gender, 274 were male and 603 were female. Country of origin varied across studies. Studies that included an internationally adopted group reported a range of countries of origin including, China, Russia, Ukraine, Guatemala,

Korea (Tarullo et al, 2012; Johnson et al, 2011; Bruce et al, 2009; Garvin et al, 2012 & Olsavsky et al, 2013). All of these studies included a US comparison. Van Den Dries et al (2012) specifically looked at children adopted from China. Drury et al (2012) & Rutter et al (2007) considered children adopted from Romania, with the latter also using a UK comparison. All participants in Minnis et al (2007) were from the UK.

#### Summary of Findings (see Table 1)

In a randomised control trial, Drury et al (2012) observed genetic variations in participants randomised to different care-giving contexts (institutional care versus foster care). They reported a genetic sensitivity in relation to IF. Children with “plastic” alleles (a genetic combination linked to flexibility and sensitivity) scored higher on IF while in institutional care and scored lower when in foster care. They also showed the greatest reduction in IF over time. Children with “fixed” alleles, however, showed little change in IF between groups across time, although this effect was small.

Johnson et al (2011) looked at growth delay and predictions of IF. Their findings suggested that growth delay was a good predictor of the effect of chronic stress on the body (allostatic load). They found that “stunted” children were more disinhibited and had higher evening cortisol levels, than non-stunted children, with a large effect size of  $r=0.52$ .

Bruce et al (2009) observed outcomes for post-institutionalised (PI) and foster-care (FC) adoptees compared to non-adopted controls (NA). There was no difference in IF between PI & FC. Both adopted groups scored higher on IF than controls (with a medium effect,  $\eta^2=0.09$ ), but there were no group differences on attachment scores. There was an association between IF & length of time in institution (with a medium effect size  $r=0.29$ ). Cognitive ability, attachment, & emotional understanding were not associated with IF. There was a negative association between IF & inhibitory control. Inhibitory control accounted for a significant amount of IF variability, when length of time in institutional care was controlled for (with a medium effect size of  $r^2=0.13$ ).

In a community twin study, Minnis et al (2007) found that IF was highly correlated in monozygotic twins and only moderately associated in dizygotic pairs, suggesting a genetic component. Large effect sizes were found for monozygotic pairs in males and females respectively  $=0.923$ ,  $r=0.918$ . This effect was stronger in males. The authors also reported that harsh parenting and parental negativity were associated with IF after controlling for age, gender and cognitive ability.

In a study examining the biological correlates of indiscriminate behaviour, Olsavsky et al (2013) compared PI children with controls. Groups participated in a functional Magnetic Resonance Imaging experiment intended to examine amygdala response to mother versus stranger faces. They found that IF was higher in PI than controls and that this was associated with age-at-adoption, (with a medium effect,  $r=0.37$ ). There were no group differences in attachment. They found that controls showed greater amygdala activation for mothers, whereas PI children's amygdala activation was equivocal across stimuli (mothers versus strangers faces), with a medium effect size  $r=-0.39$ . There was a negative association between adoptive age and amygdala discrimination. Higher IF scores were associated with attenuated amygdala discrimination.

Tarullo et al (2011) examined the effects of institutional care on underlying neural systems. Infancy is a period of rapid neural development and Tarullo et al (2011) showed that the caregiving context is associated with a pattern of neural activity which was predictive of IF. They assessed electroencephalogram (EEG) power in PI children, FC children and non-adopted (NA) controls. They also reported a large effect size for the group differences in IF scores; IF was higher in adopted groups than controls:  $\eta^2=0.83$ , although there were no differences between FC and PI. They found large effect sizes for atypical EEG power correlates with IF. IF was predicted by higher low frequency theta power,  $\eta^2=0.52$  and lower absolute alpha power,  $\eta^2=0.72$ . Higher frequencies of power are indicative of faster processing and a more alert state. Therefore, these findings provide an insight into the reduced arousal of maltreated children compared to controls. The authors suggest that this supports a hypoactivation model of institutional rearing; that children with a history of maltreatment present with a delay in neural development compared to controls and that this hypoactivation may persist following adoption into a more nurturing environment.

In a longitudinal study, Rutter et al (2007) compared outcomes for children internationally adopted from Romanian Institutions (PI) and previously fostered children adopted within the UK. They found higher IF in PI compared to controls at age 6. Marked IF persisted to age 11 and was predicted by length of time in institution. This effect was moderate  $r=0.206$ . Persistence in IF was not related to attachment security. However, head circumference and inattention at age 6 were also predictive of persistence at age 11. Post-adoption environment was not associated with persistence or offset of IF. IF was also associated with cognitive impairments and peer relationship problems.

Van den Dries et al (2012) investigated maternal sensitivity, child responsiveness, and indiscriminate friendliness in PI and FC children. This study found a negative association between parental sensitivity and IF, with a medium effect size at follow-up,  $r=0.25$ . IF scores were equivocal between PI and FC and there was no change in IF or parental sensitivity over time. Cognitive ability was also correlated with IF. There was a significant increase in child responsiveness over time with a medium effect size of  $\eta^2=0.16$ ; FC children showed greater increase in responsiveness over time compared to PI.

In a study observing post-adoption parenting, Garvin et al (2012) found a difference in IF between a PI and FC group. They reported that parenting quality in the PI group was lower than controls, with a large effect size,  $\eta^2=0.45$ ; PI parents scored lower on parental structuring and non-intrusiveness. They also found that better parenting predicted higher emotion understanding and that quality of care-giving predicted IF in the PI group.

Finally, Pears et al (2009) examined correlates of IF in maltreated foster children compared to age-matched controls. They found that IF was high in the foster care group. They reported that lower inhibitory control was associated with higher IF. Secure attachment-related behaviours and cognitive ability were not correlated with IF. Number of carers & maltreatment were not directly related to IF, but were associated with inhibitory control.

#### Limitations

Limitations of these studies are reported in table 1. Nine out of the ten studies highlighted the use of parental report in order to measure IF or pre-adoptive care. Two studies suggested that their sample size was too small (Drury et al, 2012; Rutter et al, 2007). Most samples were predominantly/all female. Pears et al (2009) note that their composite score of IF was not validated, and Rutter et al (2007) suggests that using the same measure of IF for controls may not be valid/sensitive enough to detect effects. Indeed, there was heterogeneity in how IF was measured across studies.

#### Study Quality

Overall quality was high with 5 studies rated as 'moderate' quality (Drury et al, 2012; Johnson et al, 2011; Bruce et al, 2009; Minnis et al, 2007; Olsavsky et al, 2013) and 5 as 'high' quality (Tarullo et al, 2011; Rutter et al, 2007; Van den Dries et al, 2012; Garvin et al, 2012; Pears et al, 2007), see appendix 1.4.

### Studies Rated as 'Moderate Quality'

Studies of moderate quality scored lower on reporting items. For example, Drury et al (2012) did not adequately describe the intervention of interest. Studies also varied in their reporting of potential confounding variables (Drury et al, 2012; Minnis et al, 2007; & Olsavsky et al, 2013). Actual probability values were not reported for Johnson et al, 2011; Bruce et al, 2009; & Olsavsky et al, 2013.

With regard to external validity, sample representativeness was unclear for Drury et al, 2012; Johnson et al, 2011; & Olsavsky et al, 2013 and all five studies did not report whether there were any differences between those asked and those that participated. The lab setting of Olsavsky et al (2013) also reduced its external validity.

With regards to internal validity, blinding of participants is not possible. However, Drury et al (2012) blinded assessors. This was not reported for other moderate studies. Drury et al (2012) reported findings of an unplanned analysis which reduced the internal validity score.

With regards to selection bias, all studies failed to report the period of recruitment and whether this differed between groups. Given that these studies were predominantly observational, they did not score for randomisation. However, the RCT by Drury et al (2012) did not report how participants were randomised or whether allocation was concealed from assessors.

All studies controlled for confounding variables. Minnis et al (2007) did not describe the characteristics of patients lost to follow up. Finally, Olsavsky et al (2013) may have been underpowered.

### Studies Rated as 'High Quality'

Studies that were high quality (Tarullo et al, 2011; Rutter et al, 2007; Van den Dries et al, 2012; Garvin et al, 2012; Pears et al, 2007) scored higher in reporting. However, all studies did not describe any risks to participation, though it seems that risk would be low within observational designs. Tarullo et al (2011) did not report characteristics of participants lost to follow-up. Only Pears et al (2007) reported actual probability values.

All high quality studies scored higher in external validity as the characteristics of the source population, and those who did not participate, were described. As mentioned previously, observational studies cannot blind participants; however, Tarullo et al, (2011); Rutter et al, (2007); & Van den Dries et al, (2012) blinded assessors. The groups in Van den Dries et al (2012) may have been too similar in care-giving background; the FC group was heterogeneous and experienced a range of institutional care of 0-14months. Finally Rutter et al (2007) may have been underpowered.

**Table 1: Summary of studies**

Study	Quality Rating	Design	Sample Characteristics	Outcome Measures	Results	Effect sizes	Reported Limitations
1. Drury et al (2012)	17/28	Randomised Control Trial.  Assessed at baseline and ages 30, 42 & 54 months.	Care As Usual Group, n=68 (33 male, 35 female). Foster Care (FC; n=68, 34 male, 34 Female). Aged between 6 and 30 months at recruitment.  No significant genetic differences between the groups. Outcome measures not associated with gender or ethnic background.	Indiscriminate friendliness (IF): Disturbances of attachment Interview (DAI; Smyke, Dumitrescu & Zeanah, 2002).  Genotype: DNA extracted from Master Amp Buccal swabs to measure 5httlpr & met66val	Intent to treat analysis showed a significant interaction of genotype, group and time in relation to IF. Children with “plastic” genotype scored higher on a measure of IF whilst in CAUG. Participants with the same “genetic sensitivity” scored lower in IF in the FC group & the greatest reduction in IF from baseline to 54months. Children with “fixed” alleles showed little change in IF between groups across time.	Small to medium effect sizes ( $r^2=0.06$ , <b>0.05 &amp; 0.08</b> ) were found respectively for BDNF, 5httlpr, & “plasticity” in relation to IF from baseline to follow-up.	Small sample size  Type II error due to population stratification.
2.Tarullo et al (2011)	21/28	Prospective Cohort study.  Assessed at baseline & at 36 months old.	Non-adopted controls (NA; n=47; 39 female & 8 male). PI group, (n=37; 33 female & 4 male). FC group, (n=39; 15 female & 24 male). Aged 18-20 months at baseline.  Groups were homogenous in socioeconomic status but differed on country of origin, and age at adoption.	General deprivation: parental questionnaire; length of time in institutional care; growth measurements following adoption.  Neural activity: Electroencephalogram  Non-verbal cognitive ability: Visual subscale of the Mullen Scales of Early Learning  IF: Bruce’s et al (2009) observational measure. Inhibitory Control: The dinky toys and gift task (Kochanska, Murray & Coy, 1997)	PI group scored significantly higher than NA in low frequency theta power. There was greater alpha power in the left hemisphere for NA vs. PI/FC. Theta and alpha power were not related to general deprivation or non-verbal cognitive ability. PI/FC scored higher on IF than NA. IF was not related to general deprivation or cognitive ability. IF was predicted by higher theta and lower alpha power. No group differences in delay of gratification.	Large effect size between groups’ low frequency theta power, PI vs. NA: $\eta^2=0.69$ ;  IF higher in adopted groups than controls: $\eta^2=0.83$  IF predicted by higher low frequency theta power, $\eta^2=0.52$ and lower absolute alpha power: $\eta^2=0.72$	Use of parental report  Low density EEG array had limited spatial frequency.  Female dominated sample.

3. Johnson et al (2011)	19/28	Case-control design.	<p>Total n=120 (mean age 6.85years, SD=0.56). Groups (PI, FC &amp; NA) were matched on gender (N=40; 30F &amp; 10 M). FC &amp; NA groups were matched on age.</p> <p>There were differences across groups' IQ.</p>	<p>Pre-adoption care: Parental questionnaire.</p> <p>Growth at testing and adoption: Body Mass Index, Parental review of medical records at adoption, &amp; GP records.</p> <p>Diurnal salivary cortisol: Thrice daily swabs collected by parents over 2 days.</p> <p>IF: Tizard &amp; Rees' (1975) observational measure and parental report.</p>	<p>Height for age at adoption was associated with IF. When adopted children were grouped "stunted" and "non-stunted", a significant association was found and only the stunted children differed from NA on IF.</p> <p>There was a significant interaction of stunted growth and diurnal cortisol levels. The stunted group had a trend of lower morning cortisol and significantly higher afternoon and evening cortisol. For the stunted group, afternoon and evening cortisol levels were associated with IF scores.</p>	<p>Small effect size reported between stunted and non-stunted groups' IF scores: <math>\eta^2=0.01</math>.</p> <p>A small effect was reported for stunted group <math>\times</math> diurnal cortisol: <math>\eta^2=0.06</math>.</p> <p>A large effect size was found for the association of IF and increased afternoon and evening cortisol levels for the stunted group: <math>r=0.52</math>.</p>	<p>No control for genetic predictors of height.</p> <p>Did not account for prenatal factors.</p>
Rutter et al (2007)	21/28	Prospective cohort. Assessed at 4, 6 and 11 years old.	<p>PI: n=165, subgroup: &gt;6 months old at entry into care (n=58; 27F, 31M); 6-24 months (n=59; 33F, 26M); 24-42 months (N=48; 31F, 17M).</p> <p>Adopted controls (adopted before aged 6 months from the UK); n=52 (18F; 34M).</p> <p>Groups were homogenous in socioeconomic factors.</p>	<p>Duration of institutionalisation &amp; Preadoptive care: age at arrival in UK; parental report of care conditions &amp; retrospective developmental questionnaire; Medical records from arrival in UK.</p> <p>IF: semi-structured interview with parents. Blind Investigator ratings following three tasks: puppets, balloons, &amp; bus story. And ratings of interactions with investigator at age 11.</p>	<p>Marked IF greater in PI at age 6. This was associated with duration of institutional deprivation. Only marked IF persisted to age 11. Persistence in IF was not associated with attachment security.</p> <p>However, head circumference and higher inattention at age 6 was predictive.</p> <p>There was a difference in persistence in IF and number of months in institutional care. Post-</p>	<p>Medium effect sizes reported for duration in institution and presence of IF at age 6, <math>r=0.162</math>, and age 11, <math>r=0.206</math>.</p> <p>Effect sizes for head circumference and inattention were not calculated as only t-values were reported.</p> <p>A medium effect was calculated for number of months in</p>	<p>PI sample too small</p> <p>IF measure not valid for control group.</p>

				<p>Attachment security: modified strange situation procedure.</p> <p>Peer relations: Teacher and parental report.</p> <p>Behavioural/emotional problems: parental &amp; teacher report.</p> <p>Cognitive development: WISC-III subtests to generate IQ scores.</p>	<p>adoption environment was not associated with persistence or offset. IF was associated with cognitive impairments, inattention/over activity and peer relationship problems.</p>	<p>institutional care: persistence versus non-persistence: <b>d=0.62</b></p> <p>r-values were not reported for associations with cognitive impairment, inattention, &amp; relationship problems.</p>	
Bruce et al (2009)	20/28	Case-control study. Assessed several years post adoption.	<p>PI, n=40. FC, n=40 and NA, n=40. FC &amp; NA were matched for age and gender. Mean age in years =6.85, SD=0.56. PI &amp; FC groups differed in country of origin. Groups were similar across socioeconomic factors and differences were not related to outcome measures.</p>	<p>Composite scores of multiple measures were used to assess:</p> <p>IF: Observational measure, Tizard and Rees (1975); and parental semi-structured interview.</p> <p>General deprivation: Retrospective parental questionnaire.</p> <p>General Cognitive ability: Wechsler Intelligence Scale for Children-III (Wechsler, 1991).</p> <p>Attachment: parental semi-structured interview.</p> <p>Basic emotion abilities: emotion-recognition task, assessing understanding of emotion-situation links.</p>	<p>PI scored lower on cognitive ability, emotion control than the NA group. The FC group performed poorer on cognitive ability compared to NA, but scored higher than PI on inhibitory control. There were no group differences on attachment scores. PI &amp; FC scored higher on IF than NA, although there were no differences between PI &amp; FC. IF was not related to parental report of general deprivation. There was an association between IF &amp; length of time in institution. Cognitive ability, attachment, &amp; emotion abilities were not associated with IF. There was a negative association</p>	<p>Medium effect sizes were found for group differences in cognitive ability: <b><math>\eta^2=0.14</math></b>; basic emotion abilities: <b><math>\eta^2=0.05</math></b>; and inhibitory control: <b><math>\eta^2=0.09</math></b>.</p> <p>A medium effect was reported for group differences in IF: <b><math>\eta^2=0.09</math></b>.</p> <p>A medium effect was reported for the association between length of time in institution and IF: <b><math>r=0.29</math></b>.</p> <p>A medium effect was reported for the association between IF &amp; inhibitory</p>	Use of parental report to assess pre-adoptive care.

				Inhibitory control: go/no go task; an attention-control task; the dinky toys and gift task; the children's behaviour questionnaire (Rothbart et al, 2001).	between IF & inhibitory control. Inhibitory control accounted for a significant amount of IF variability when length of time in institutional care was controlled for.	control, $r=-0.43$ .  A medium effect size was reported for inhibitory control predicting IF, when duration of institutionalisation was controlled for: $r^2=0.13$ .	
Minnis et al (2007)	17/28	Retrospective Twin Cohort study.	Total n=6,736 twin pairs Mean age= 7.9 years.  There were minor differences in ethnicity and maternal educational attainment.	Reactive attachment disorder: Relationship Problem Questionnaire (Minnis et al, 2002)  Mental Health: Strength and Difficulties Questionnaire; SDQ (Goodman, 1997)  Parenting style: parent report (Asbury et al, 2003).  Cognitive functioning: specific measures not described. Authors report that verbal and non-verbal items of general cognitive tests were adapted for telephone administration.	Factor analysis items of the RPQ were distinct from SDQ items, suggesting RAD is distinguishable.  Harsh parenting and parental negativity were associated with IF after controlling for age, gender and cognitive ability.  In males and females, IF was highly correlated in monozygotic twins and moderately correlated in dizygotic pairs. Additive genetic effects explained the majority of variance, followed by shared environment.	Large effect sizes were reported for the association between IF and monozygotic pairs in both males and females respectively: $r=0.923$ , $r=0.918$ .  Large effects reported for the association of IF and dizygotic pairs: $r=0.533$ & $r=0.616$ , for males and females respectively.	Non-clinical and unrepresentative sample  Parental report measures used.
Van Den Dries et al (2012)	21/28	Prospective cohort. Assessed 2 and 6 months post-adoption.	PI, n=50; FC, N=42. All female, adopted from China. Mean age on arrival=13months. Groups similar in terms of parental educational attainment.	Attachment: The Strange situation procedure (Ainsworth et al, 1978).  IF: Parental questionnaire (Chisholm et al, 1995)  Maternal sensitivity & child responsiveness: Emotional Availability Scales (Biringen,	No significant differences in attachment between groups. There was a negative association between parental sensitivity and IF. PI and FC children's scores were equivocal. There was no change in IF over time across groups. There was	A medium effect size was reported for the association between parental sensitivity and IF, $r=0.20$ & $r=0.25$ for T1 & T2 respectively.  A small effect was reported for IF &	Details of pre-adoptive care could not be reliably established.  Care giving background of FC was heterogeneous.  Questionnaire used to measure IF.

				1998)	no change in parental sensitivity over time and no differences in sensitivity between groups. Cognitive ability was correlated with IF. There was a significant increase in child responsiveness over time. There was no difference between groups' responsiveness. FC children showed greater increase in responsiveness over time compared to PI.	cognitive ability, $\eta^2=0.08$ .  A moderate effect was found for the increase in child responsiveness across time: $\eta^2=0.16$ .  A small effect was reported for the interaction in responsiveness over time between groups: $\eta^2=0.05$ .	Short length of time (8 minutes) to rate EA.
Garvin et al (2012)	21/28	Prospective Cohort Study.  Assessed at 18months, 30months, and 36months.	PI, n=35 (31F & 4M); FC, n=38 (15F & 23M) and NA, N=48, (38F & 10M). Groups differed in country of origin and age at time of adoption. Groups were comparable in family income and parental education.	Initiation of joint attention (IJA): Early Social Communication Scales (Mundy et al, 2003)  Parenting Quality: EA Scales (Biringen, 1998)  IF: Parental report (O'Conner & Zeanah, 2003)  Emotional Understanding: Denham's (1986) emotional understanding task.	PI scored higher on IF than FC. PI's parenting quality was lower than controls. PI parents scored lower on parental structuring and non-intrusiveness compared to controls. There was a significant interaction of EA & IJA across group IF scores. EA moderated lower IJA scores at 18months, and IF at 30months in the PI group.	Medium IF differences between groups: $\eta^2=0.08$  Large group differences in EA scores: $\eta^2=0.45$  Small effects reported for differences in structuring and non-intrusiveness across groups: $\eta^2=0.06$ & $\eta^2=0.04$ respectively.  Medium effect of regression model, IJA×PI×Parenting, $r^2=0.19$	Use of parental report.  Possibility of cultural factors confounding results.  All female sample.  Differences in age at adoption between the PI and FC group (FC were adopted at a younger age).

Pears et al (2009)	21/28	Prospective cohort study assessed at baseline (4weeks in placement), and every 3 months for 24 months.	Foster Care (FC, n=93, mean age at baseline= 4.45years) Community control (CC, n=60, mean age at baseline= 4.33 years). Groups were homogenous in age, gender and ethnicity.	<p>IF: carer report (Chisholm, 1998).</p> <p>Maltreatment history: information from child protection case records. Coded using the Maltreatment Classification System (MCS; Barnett et al, 1993)</p> <p>Attachment behaviour: The parent attachment diary (Stovall &amp; Dozier, 2000).</p> <p>Inhibitory control: A composite score derived from carer reports (Child Behaviour Checklist, Achenback, 1991; &amp; Early Childhood Inventory; Gadow &amp; Sprafkin, 1996) and lab-based tasks (stroop task, &amp; a card sort task).</p> <p>Cognitive Ability: subscales of the Wechsler Preschool and Primary Scales of Intelligence-revised, Wechsler (1989)</p>	<p>IF was higher for the FC children than for the CC group. IF 19% prevalence in the CC group. Lower inhibitory control was associated with higher IF scores. Secure attachment-related behaviours were not correlated with IF. No relationship was found between IF scores and age at baseline or cognitive abilities.</p> <p>There were no significant associations between IF and maltreatment variables or number of foster carers. Number of carers and emotional maltreatment were associated with inhibitory control.</p>	<p>A medium effect was calculated for the difference in IF (FCvsCC): <b>Cohen's d=0.61.</b></p> <p>A medium effect was reported for the negative association between inhibitory control and IF: <b>r=-0.31</b></p> <p>Medium effect sizes were reported for the negative associations between emotional maltreatment &amp; inhibitory control, and number of carers and inhibitory control respectively, <b>r=-0.27</b> &amp; <b>r=-0.26</b></p>	<p>Use of carer-report measures.</p> <p>Non-validated composite score of inhibitory control.</p>
Olsavsky et al (2013)	15/28	Quasi-experimental design. Within-subjects IV: Maternal vs. stranger stimuli. Between subjects:	PI (N=33, Mean age = 10 years), and controls (n=34, mean age = 11). Groups differed in IQ scores.	<p>IF: parental questionnaire.</p> <p>Attachment security: the Security scale (Kerns et al, 2002).</p> <p>Other: Child behaviour checklist (Achenback, 1991); &amp; Clinical history from parents.</p>	<p>PI scored higher on IF which was associated with age-at-adoption. No group differences in attachment. There were no group differences in RT's to maternal vs. stranger stimuli. Controls showed greater amygdala activation for mothers, whereas PI</p>	<p>A medium effect was reported between IF and age at adoption, <b>r=0.37.</b></p> <p>Medium effect for equivocal amygdala responses to mothers vs. strangers for those adopted later, <b>r=-.39.</b></p>	<p>Use of parental report measures of IF.</p>

		<p>Group &amp; age at adoption. DV's: Reaction Times, &amp; Differential Amygdala responses.</p>		<p>Cognitive ability: Wechsler Abbreviated Scale of Intelligence (Wechsler, 1999)</p> <p>Differential Amygdala response: Functional Magnetic resonance imaging (fMRI)</p> <p>Behavioural disinhibition: Reaction times; participants viewed maternal or stranger images with happy or neutral expressions. Participants pressed a button when they saw a happy expression (regardless of model).</p>	<p>amygdala activation was equivocal across stimuli. PI showed greater response to strangers compared to controls. There was a group difference in connectivity between the left amygdala &amp; the ventral anterior cingulate, which was greater in controls. There was a negative association between adoptive age and amygdala discrimination. Higher IF scores were associated with attenuated amygdala discrimination when IQ &amp; age at adoption was controlled for.</p>	<p>A medium effect was reported between IF and attenuated amygdala discrimination when IQ &amp; age at adoption were controlled for: <b>r=0.28</b>.</p>	
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## **Discussion**

In a systematic review of the literature, several factors were associated with IF. Not unexpectedly, IF is higher in PI children compared to non-maltreated controls. IF was also observed in fostered populations, with several studies reporting no differences between PI & FC (Tarullo et al, 2011; Johnson et al, 2011; Rutter et al, 2007; Bruce et al, 2009; & Van den Dries et al, 2012). These studies were high or moderate in quality and therefore the results seem reliable. It is notable, however, that due to difficulties reliably assessing pre-adoptive care, groups may have been heterogeneous. This was particularly relevant in Van Den Dries et al (2012), but may be less relevant in other studies. This finding is consistent with Zeanah & Smyke (2008) who reported that RAD is prevalent in both institutionalised and non-institutionalised populations.

Zeanah & Smyke (2008) also reported that IF is distinct from and less amenable to change than attachment insecurity. This review would support this finding. Several studies reported that attachment security was not related to IF (Olsavsky et al, 2013; Pears et al, 2009; Bruce et al, 2009, Van den Dries et al, 2012; Minnis et al, 2007; & Rutter et al, 2007), supporting the theory that IF is not captured in traditional patterns of attachment. Furthermore, most of the studies within this review found evidence of IF at follow-up (Drury et al, 2012; Tarullo et al, 2011; Rutter et al, 2007; Van Den Dries et al, 2012; Garvin et al, 2012; Pears et al, 2007). Indeed, Rutter et al (2007) found that marked IF persisted into late childhood. This would also support Minnis' et al (2006) evolutionary theory of disinhibition. Furthermore, Tarullo et al (2011)'s finding, that hypoactivation of neural activity predicts IF, provides a rationale for the persistence of IF following adoption into a more nurturing environment.

Chisholm (1998) suggested that higher IF in PI groups reflects an adaptive strategy for managing multiple caregivers. This review found several studies that reported an association between length of time in institution and IF (Olsavsky et al, 2013; Bruce et al, 2009; & Rutter et al, 2009). Pears et al (2009), however, directly tested the association between number of carers and IF and found no relationship. They did note that inhibitory control was associated with number of carers and IF, and subsequently, number of carers may indirectly affect IF. The results of this review support this finding, given that several studies found an association between inhibitory control and IF. Bruce et al (2009) did not replicate these findings; however, they focused only on delay of gratification as a measure of inhibitory control, which is likely to be less robust.

This review found that a genetic sensitivity, moderated by the environment, is associated with IF. Minnis et al's (2007) study provides evidence that goes beyond shared environment. Furthermore, Drury et al (2012) found a small effect size for "genetic plasticity" that might explain the persistence of IF when caregiving quality improves. These findings support Zeanah & Fox's (2004) suggestion that child temperament may add to our understanding of disorder-specific pathways. It is likely that there is a genetic predisposition that, given the right context, results in IF. Further research would be needed to reliably link the persistence of IF to a genetic sensitivity and replicate the findings by Drury et al (2012). Tarullo et al's (2011) finding also lends support for the biological correlates of IF. They suggest that an increase of one to one social interaction may ameliorate the effects of deprivation on neural development but given the rapidly developing infant brain, interventions should be timely. Further follow-up would be of interest to establish whether any of these biological correlates change throughout childhood and adolescence.

### Care-Giving Quality

Contrary to Zeanah & Smyke (2008), this review would support that quality of caregiving is associated with IF. Indeed the prevalence of IF in FC would suggest that the aetiology goes beyond multiple caregivers, and that the quality of care is important. Garvin et al (2012) found that emotional availability predicted IF at follow-up. Furthermore, Van den Dries et al (2012) found that parental sensitivity was associated with IF. Both these studies were rated as high quality and therefore the results are assumed reliable. It is likely that these differences reflect methodological differences. Both Garvin et al (2012) and Van den Dries et al (2012) used the EA scales (Biringen, 1998) which is a comprehensive observational measure of infant-carer dyads and is likely to be a more powerful measure of care-giving quality.

This finding supports the “dynamic conceptualisation” suggested by Coleman (2013). One study found that child responsiveness improved over time following adoption, when care-giving quality improves (Van Den Dries et al, 2012). One would speculate that child responsiveness would affect parental sensitivity and vice versa. Further research would be needed to test this theory.

### Review Limitations

The results of this review are limited to papers published in English. The results are also limited to published data since it was beyond the scope of this study to include non-peer reviewed articles. The use of the Downs and Black (1980) checklist was also a limitation of the study. Some of the items on the checklist resulted in a score of unable to determine which yielded a value of “0” for studies that were not randomised. This was due to the items being not applicable to that study. The checklist is used for both randomised and non-randomised studies, however, and was therefore considered clinically useful in the sample of papers identified.

### Future research

More longitudinal research will shed light on the course of disinhibition over time. Future research focussing on the validation of a standardised measure of IF would be useful. Finally, further research is needed to establish whether post-adoption parenting is related to IF persistence. Although genetic sensitivities may help explain the aetiology of IF, quality of care-giving is an important agent of change, and thus has implications for the development of interventions.

### **Conclusion**

Indiscriminate friendliness is prevalent in post-institutionalised and foster children and is not related to attachment security. It is associated with inhibitory control, which is likely to moderate the relationship between indiscriminate friendliness and length of time in institution. Genetic factors are likely to predispose children to these difficulties, although this is moderated by environmental factors. Post-adoption parenting quality is associated with indiscriminate friendliness, and emotional availability is a predictive factor. This has implications for the development of interventions.

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## Chapter 2: Major Research Project

Indiscriminate friendliness in maltreated children: the importance of emotional availability.

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## **Plain English Summary**

### Background

Previous literature has found that children who have experienced maltreatment are more likely to behave in socially inappropriate ways. More specifically, these children are described as displaying indiscriminate friendliness (IF). IF refers to an over-familiarity with strangers and a tendency to “go off” with unknown adults. This risky behaviour has also been associated with psychiatric disorders later in life. Research shows that IF persists even when parenting improves and some studies have shown that the quality of care following maltreatment is not associated with IF. More recently, however, studies reported that emotional availability (the degree to which carer and infant are able to respond to one another’s emotional signals) is predictive of IF, suggesting that quality of care is important.

### Aims

This study aimed to assess whether EA was associated with IF in a sample of maltreated children. Specifically, this study looked at different sub-constructs of EA (carer and child factors) to establish which aspects of the carer-child relationship might be related to IF.

### Methods

Participants were drawn from an ongoing study involving maltreated infants who had been accommodated due to child protection concerns. Meal and playtime videos of carer-infant dyads were assessed using the emotional availability scales. IF was assessed using a semi-structured interview with carers. These variables were explored in a statistical analysis to assess potential associations.

### Results:

IF was negatively associated with the child’s responsiveness and involvement of the carer. In other words, children who were indiscriminately friendly were less involving and responsive to their carer. IF was also related to carer non-intrusiveness, in that more intrusive and hostile carers reported increased IF in the child. In a statistical comparison, it was found that the emotional availability of the child was uniquely associated with IF, even when carer non-intrusiveness was controlled for.

### Conclusion and Practical Applications:

Child EA is uniquely associated with IF in maltreated infants, even when other ‘associated factors’ are taken into account. It is suggested that care-giving alone is insufficient in explaining IF in maltreated children and that perhaps carer-child interactions would be a more helpful concept. It is hoped that the results of this study will support the development of interventions focussing on the carer-child relationship.

## **Abstract**

Background: Indiscriminate friendliness (IF) refers to a lack of reticence with unfamiliar adults and has been well documented in maltreated children. This risky behaviour is distinct from attachment insecurity and has been found to persist when care-giving quality improves. There is a lack of consistency in the literature regarding the importance of care-giving following adoption. Some studies suggest that care-giving quality is not related to IF, whilst others have suggested that the emotional availability of carers is predictive. This study aimed to establish if there is a relationship between EA and IF in a group of previously maltreated infants.

Method: In a cross-sectional design, a subsample of infant-carer dyads (n = 55), that were recruited as part of an on-going RCT (Pritchett et al, 2013), were observed. Videos of meal and playtime activities were analysed using The EA Scales (Biringen, 1998). IF was measured, as part of the RCT, using a semi-structured interview. This tool also identifies children that in addition to IF, have no preferred attachment figure: IF (NA). Univariate correlation analyses and regression analyses were used to explore relationships between variables.

Results: This study found that child emotional availability predicted indiscriminate friendliness, even when other associated factors (age and carer non-intrusiveness) were controlled for. A composite Carer EA score was not related to IF, but carer non-intrusiveness was significantly associated with IF.

Conclusions: Child emotional availability is uniquely associated with indiscriminate friendliness in maltreated children. A specific care-giving factor (non-intrusiveness) was associated with indiscriminate friendliness. It is suggested that carer-child interactions are related to indiscriminate friendliness in maltreated children and may represent a useful target for intervention. Therefore, future research may wish to explore the amelioration of indiscriminate friendliness through an intervention focusing on the carer-child relationship.

**Keywords: Indiscriminate friendliness, Reactive Attachment Disorder, emotional availability**

## **Introduction**

Disinhibited Social Engagement Disorder; formerly Reactive Attachment Disorder, disinhibited subtype (American Psychiatric Association, 2013), is characterised by a pattern of atypical sociability that is noticeably disturbed and developmentally inappropriate. A key aetiological factor in diagnosis is pathogenic care (World Health Organisation, 1992; APA, 2013). This refers to a persistent neglect of the child's basic emotional or physical needs and/or repeated changes in primary caregiver. A core characteristic of this disorder is indiscriminate friendliness (IF) which refers to a lack of reticence with unfamiliar adults.

IF has been well-documented in post-institutionalised children (Chisholm, 1998). Bruce, Tarullo & Gunnar (2009), however, found no differences in IF between institutionalised children and children in foster care. Other studies have supported the prevalence of IF in fostered populations (Pears et al, 2010; Rutter et al, 2007). Also of interest, is that IF is distinct from attachment insecurity (Chisholm, 1998; O'Connor et al, 2003; Bruce et al, 2009). Minnis et al (2006) argue that, because of inconsistent care giving, these children continue to be haphazard in their displays of affection, despite being able to develop a preference for a single attachment figure. This suggests that IF is more robust than security-seeking behaviour. Indeed, a longitudinal study by Tizard and Hodges (1989) demonstrated the persistence of IF into late adolescence. In a more recent study, Rutter et al (2007) found that marked IF persisted to age 11 for both post-institutionalised and previously fostered children.

There are clear concerns for children who present with these difficulties, regarding risk and potential problems later in life. In a study comparing school-aged children (IF versus controls), Kočovská et al (2012) found that the majority of disinhibited children had a range of neuro-psychiatric disorders, including ADHD, PTSD, & RAD. Furthermore, Minnis et al (2013) found that children diagnosed with RAD, in the general population, had co-occurring psychiatric disorders. Therefore, it would be salient to explore potential factors that could inform the development of interventions.

Given the aetiology of "pathogenic care", it would seem reasonable that improved 'quality of care' might ameliorate these difficulties and contribute to recovery. However, in a review by Zeanah & Smyke (2008) it was concluded that care-giving quality was not associated with IF. This is a surprising finding which the authors do not elucidate except to suggest that this might explain the persistence of IF when quality of care improves. Rutter et al (2007) also found that post-adoption environment was not associated with the persistence or offset of IF, at age 11. However, this study measured the quality of the environment indirectly via carer-report. It also measured factors such as divorce and parental educational attainment for which we cannot assume an association with quality of care.

In a recent short-term longitudinal study, Van Den Dries et al (2012) compared 50 internationally adopted children from Chinese institutions to 42 children fostered in China. In contrast to Rutter et al (2007), they used an observational measure to rate the quality of carer-infant interactions: the Emotional Availability (EA) scales (Biringen, 1998). IF was measured via carer-report. They found that foster carers who scored higher on maternal sensitivity ratings reported less IF. They also found that children in foster care were more responsive to carer interaction than post-institutionalised children. This suggests that maternal sensitivity and child responsiveness might interact to predict IF. This study did not consider all reciprocal elements of EA as described by Biringen (1998), such as carer structuring; carer non-intrusiveness; and carer non-hostility, as well as the child's involvement of the carer in interactions. Nevertheless, this study provides evidence that not only is care-giving quality following maltreatment associated with IF but that carer-child interactions might be salient. This is an important distinction, as children are not passive receptors of care but are active in a dynamic relationship (Biringen & Robinson, 1991).

Garvin et al (2012) supported these findings in a prospective cohort study that examined the relationship between EA and IF in post-institutionalised children, children adopted from foster care and non-adopted controls (total n = 121). They found that despite high care-giving quality in the sample, there were significant differences between groups. Carer structuring and non-intrusiveness were lower in the post-institutionalised group and a composite 'carer EA' factor was found to moderate IF at follow-up. This study did not include the child-specific factors of EA due to concerns regarding collinearity. The authors assumed therefore, that 'adult EA' would subsequently capture these child-specific factors. However, Biringen (1998) highlights that when the dyad lack a shared history, as in foster or adoptive care, there may be more noticeable differences between child and adult EA. Furthermore, given the findings by Van den Dries, child EA may be an important factor in relation to IF.

#### Aims and Hypotheses

This study aims to establish if there is a relationship between EA and IF in a group of previously maltreated infants, and if so, which aspects of EA as described by Biringen (1998) are important? This will contribute to the literature regarding the importance of quality of care in relation to IF. It will also provide details regarding which post-care relational variables might be associated with IF, and subsequent useful targets for future interventions. Given previous evidence supporting an association between carer EA and IF, it is predicted that there will be a negative association between carer EA and IF, and that carer structuring and non-intrusiveness will be negatively associated with IF. Based on previous findings, it is predicted that child EA will be negatively associated with IF.

## **Method**

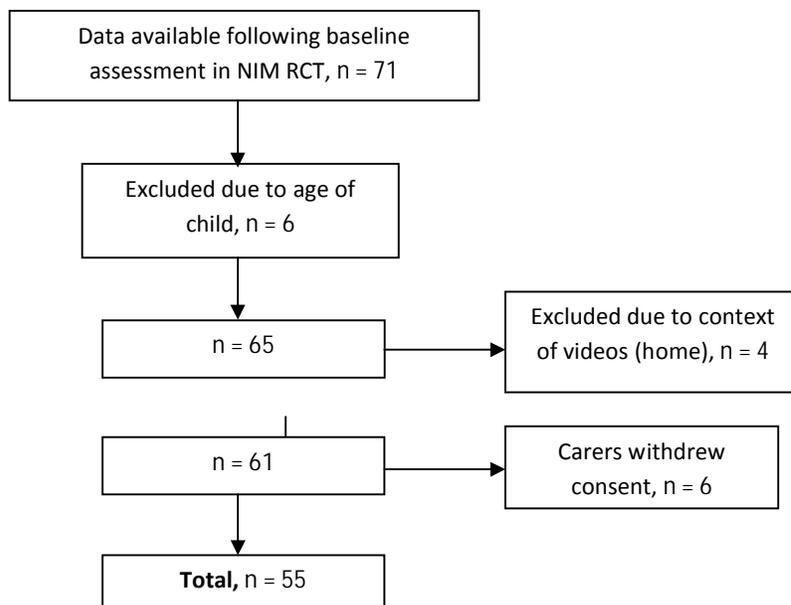
### Design

In a cross-sectional design, baseline data (meal and play time videos) from an on-going RCT was analysed by the investigator. Indiscriminate friendliness (IF) and emotional availability (EA) were the observed outcomes. The investigator analysed data to assess EA. IF was assessed as part of the ongoing RCT and was subsequently included in this study to observe potential relationships.

### Participants

The sample used in this study was a subsample of children and their carers that were included in an on-going RCT evaluating an infant mental health intervention (the New Orleans Intervention Model; NIM), in Glasgow. Recruitment for the trial took place from December 2011 until April 2013. Those invited to participate were carers with a child placed with them, aged between six and sixty months, who had been accommodated due to child protection concerns. The trial excluded children if they had a learning disability or if the primary caregiver was not available to take part in the intervention. For further details on the trial see Pritchett et al (2013). Seventy-one children were available for the current study. Children were excluded if they were too young (<12 months) for assessors to administer the IF measure (n = 6). Participants were also excluded if data was collected at home rather than the research base because 'home data' was less controlled and subsequently different (n = 4). Six participants withdrew consent and were subsequently missing from analysis. This resulted in a sample of 55 children aged between 12 and 62 months (M = 36.53, SD = 14.71), 24 were female and 37 were male. Of those missing, three were female and three were male with age ranges between 17 and 48 months, suggesting no systematic differences between those who participated and those missing. Unfortunately, carer demographics were not collected as part of the NIM trial, and were subsequently unavailable for this study. Figure 1 summarises the selection process.

**Fig.1: Flow diagram of selection process.**



## Procedure

Videos of infant-carer interactions collected at baseline in the NIM RCT were analysed by the investigator using a measure of emotional availability. The videos consisted of meal and playtime activities. In the videos, a researcher took the family into a room, in which a table was set up with two chairs at each side. The researcher brought in a box of toys and instructed the dyad to “play as they normally would”, before leaving the room for 10 minutes. After several additional tasks, not used in these analyses (see Pritchett et al, 2013), the researcher brought in a tray with lunch, consisting of 2 sandwiches, 2 bananas, 2 packets of crisps and 2 yoghurts, before leaving the room again. After a further 20 minutes, the session was concluded and the carer was paid £20 plus travelling expenses for their participation. Data regarding indiscriminate friendliness was gathered via carer interview as part of the NIM trial and was included in this study.

## Measures

The Emotional Availability Scales, 4<sup>th</sup> edition. EA was assessed using a video recording of meal and play-time activities. The Emotional Availability Scales (Biringen, 1998) are a dyadic measure of several aspects of a relationship from the perspective of both partners (Biringen & Robinson, 1991). The scales measure the degree to which carer and infant are able to respond to one another’s emotional signals, which were subsequently used to assess quality of care. The measure comprises six scales: sensitivity of the carer, carer structuring, non-intrusiveness, and non-hostility, child responsiveness to carer and child involvement of carer. Each scale is a composite score of seven subscales that measure different aspects considered salient to that dimension. For example, sensitivity predominantly reflects a carer’s warmth and ability to perceive the child’s needs as well as an awareness of timing in interactions; an ability to be creative and flexible; accepting of the child; the ability to regulate the child’s affect and manage conflict.

Four of the subscales refer to the carer and two to the child. All scales focus on the emotional quality of the interactions. The scale has shown good construct validity and concurrent validity with measures of attachment (Biringen, 2000). Videos were coded by the author who was approved as a reliable coder by Biringen following an extensive training period. Unfortunately, a second rater was not available and subsequently Biringen agreed to ensure that the test of reliability following training was more robust. Therefore, for the purposes of this study, reliability was assumed. The author was blind to the child’s IF score when rating EA. The four adult scales were summed to provide a composite ‘Adult EA’ score and similarly the child scales were summed to provide a composite ‘Child EA’ score.

Disturbances of Attachment Interview (DAI). The DAI (Smyke, Dumitrescu & Zeanah, 2002) is a semi-structured interview that evaluates disturbed attachment, including indiscriminate friendliness (IF).

This was completed with carers as part of the NIM study. The tool also evaluates a lack of preference for a single-caregiver (non-attachment) in the context of IF: IF (NA). The DAI measures both IF and IF (NA) as two continuous variables and participants are rated on both. The interview comprises 12 items in total with items six, seven and eight assessing IF. These items evaluate the child's willingness to "check back" with the carer in unfamiliar settings, the child's reticence with an unfamiliar adult, and willingness to "go off" with a stranger. These items were rated on a 3-point Likert scale where "0" is rarely, "1" is sometimes, and "2" is clearly. A composite score ranged from 0-6, with higher scores indicating more indiscriminate friendliness. IF (NA) was measured by a composite score of items one, six, seven, and eight. Item one referred to the child's preference for a specific attachment figure. For example, the interview asks the carer, Does s/he have one special adult that s/he prefers? Who is it? How does s/he show that he prefers that person? A composite score ranged from 0-8 with increasing scores indicating higher IF (NA). Each participant had an IF and IF (NA) score and thus both were considered in the analysis. The scale has good internal validity and concurrent validity with other caregiver report measures (Zeanah et al, 2005).

#### Data Analysis

Given that this is the first study in the UK to consider the association between EA and indiscriminate friendliness, it seems reasonable to consider this experiment as a pilot study that will inform future research. A correlation matrix will be completed prior to analysis to reduce the number of predictor variables used and enhance power. According to Harris's (1985) formula, 10 participants per variable would be appropriate to detect a medium effect size, when there are 6 predictors or more (Van Voorhis & Morgan, 2007). Therefore the study intends to recruit a sample size of 70 participants. Univariate analyses exploring the relationship between IF and the EA scales will be conducted. Collinearity amongst EA scales will be managed by using composite adult/child scores. Factors that are associated with IF and IF (NA) will be included in the regression analyses which will be conducted separately. IF and IF (NA) will be entered into a general linear model as dependent variables with EA variables as predictors.

### **Results**

#### Descriptive statistics

Age was not associated with IF,  $r(60) = 0.48, p < 0.05$  or IF (NA),  $r(60) = 0.36, p < 0.05$ . Age was also not associated with carer EA,  $r(60) = 0.69, p < 0.05$  but was positively correlated with child EA,  $r(60) = 0.03, p < 0.05$ . That is, increasing child's age was associated with increased responsiveness. This was subsequently included in the planned regression analysis. Independent sample t-tests showed no

gender differences across IF  $t(58)=1.10$ ,  $p = 0.28$ ; IF(NA),  $t(58)=1.45$ ,  $p = 0.15$ ; and EA,  $t(58)=-0.27$ ,  $p = 0.79$ . Table 1 shows descriptive statistics for the observed variables.

**Table 1: Descriptive statistics of observed variables**

Variables	N	Mean	SD
Composite Adult EA (Maximum 116)	55	97.39	16.00
Sensitivity (Maximum 29)	55	24.61	5.03
Structuring (Maximum 29)	55	23.35	4.71
Non-intrusiveness (Maximum 29)	55	23.05	4.48
Non-hostility (Maximum 29)	55	26.96	2.91
Composite Child EA (Maximum 58)	55	47.16	8.68
Child responsiveness (Maximum 29)	55	23.35	4.24
Child involvement (Maximum 29)	55	23.71	4.82
IF (range=0-6)	55	2.42	2.12
IF (NA) (range=0-8)	55	2.80	2.56

Average carer & child EA were high within the sample. An exploration of the data showed that both IF and IF (NA) were not normally distributed, in that most participants did not display this type of behaviour. Therefore univariate analyses, using spearman's rho were conducted. Table 2 shows the spearman's rho correlation coefficients for IF and IF (NA) in relation to the EA scales.

**Table 2: Correlation matrix of observed variables using spearman's rho.**

	IF	IF (NA)	EA-A	Sensitivity	Structuring	NI	NH	EA-C	CR	CI
IF	1	.96**	.14	.13	.05	.24*	.20	.52**	.58**	.45**
IF (NA)	.96**	1	.27	.15	.05	.31*	.23	.53**	.58**	.46**
EA-A	.18	.23	1	.83**	.73**	.61**	.70**	.53**	.53**	.59**
Sensitivity	.13	.15	.83**	1	.64**	.31*	.64**	.42**	.49**	.32*
Structuring	.05	.05	.73**	.64**	1	.10	.27	.32*	.31**	.34*
NI	.24*	.31*	.61**	.31*	.10	1	.47**	.56**	.46**	.40**
NH	.20	.23	.70**	.64**	.27	.41**	1	.42*	.43*	.36*
EA-C	.52**	.53**	.53**	.42**	.32*	.45**	.42**	1	.94**	.93**
CR	.58**	.58**	.53**	.49**	.31**	.46**	.43**	.94**	1	.77**
CI	.45**	.46**	.59**	.32*	.34*	.40**	.36**	.93**	.77**	1

Note: IF (indiscriminate friendliness); IF,NA (non-attached subtype) EA-A (adult emotional availability), NI (non-intrusiveness), NH (non-hostility), EA-C (child emotional availability), CR (child responsiveness), CI (child involvement)

\*\* Correlation is significant at the 0.01 level.

\* Correlation is significant at the 0.05 level.

The correlation table shows that although Child and adult EA were highly correlated, only Child EA was significantly associated with IF and IF (NA). Child responsiveness, child involvement and composite child EA scores were all negatively associated with indiscriminate friendliness, regardless of attachment status. Non-intrusiveness was negatively associated with IF,  $\rho(54) = -0.29$ ,  $p = 0.03$ , and IF (NA),  $\rho(54) = -0.31$ ,  $p = 0.02$ . There was a non-significant trend towards non-hostility being negatively correlated to IF (NA),  $\rho(54) = -0.23$ ,  $p = 0.06$ .

As described in the analysis plan, regression analyses were considered in order to evaluate the salience of associated variables. Therefore, the residuals of IF and IF (NA) were used to explore the assumptions of linear regression. Figures 2 and 3 show the normal P-P plots of the standardised residuals for both IF and IF (NA).

**Figure 1: Normal P-P plots of the standardised residuals for IF**

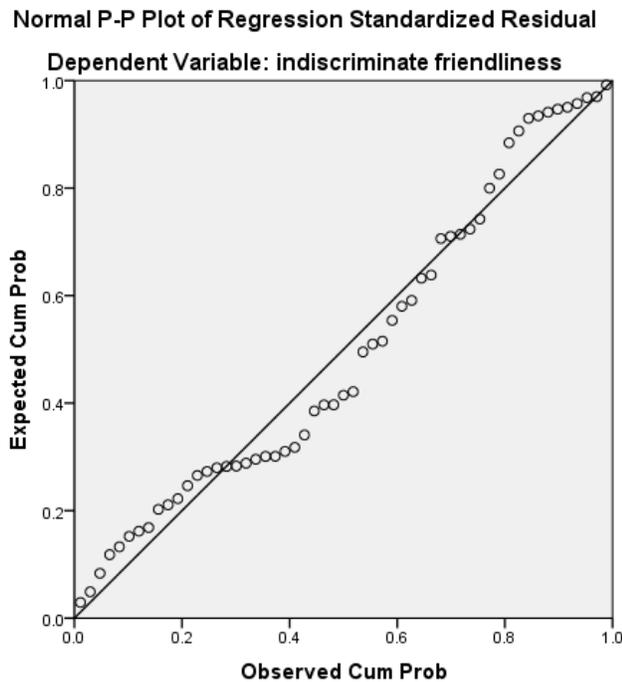
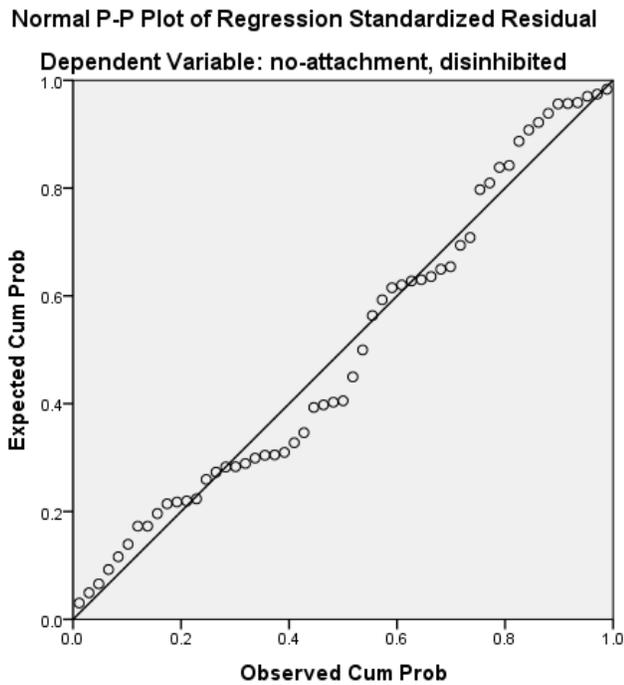


Figure 2: Normal P-P plots of the standardised residuals for IF (NA)



Both figures show reasonable normality. The linear pattern is not excessively curved and therefore the assumption is met. Scatterplots of the residuals were also examined and are displayed in Figures 3 & 4.

Figure 3: Scatterplot of the standardised residuals for IF

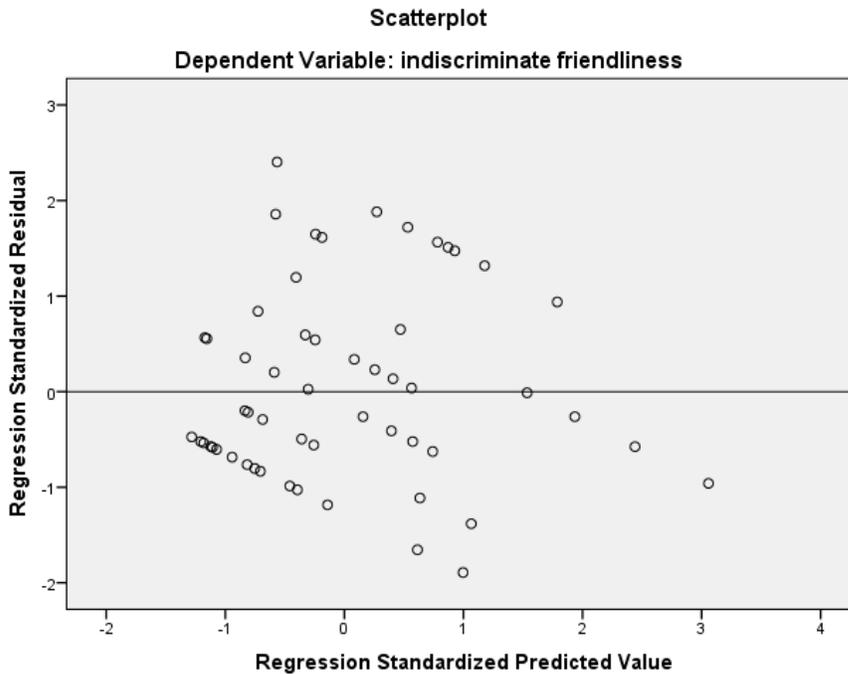
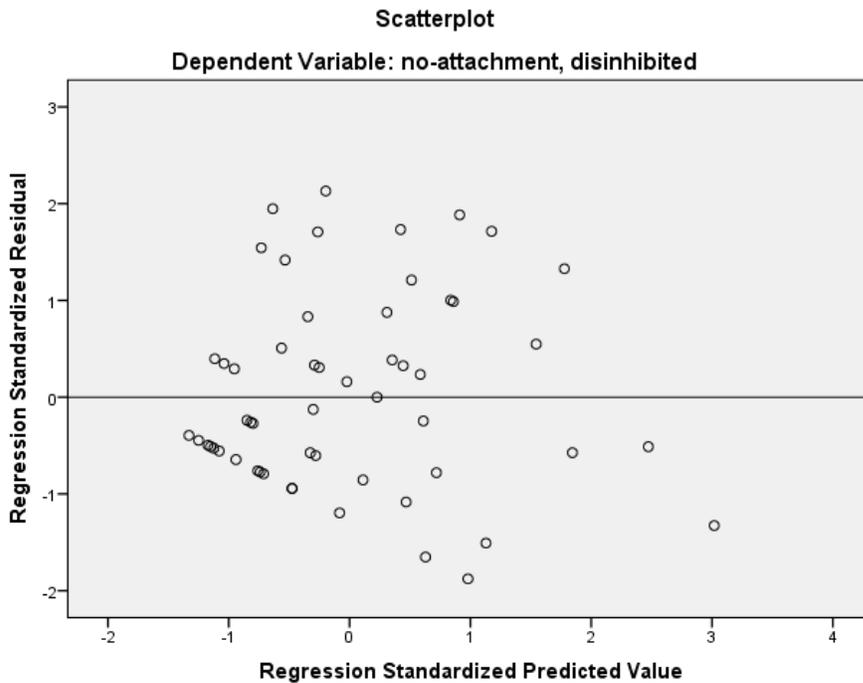


Figure 4: Scatterplot of the standardised residuals for IF



These graphs show a general spread of the residuals without a systematic pattern that would suggest that the assumption of equal spread of the residuals is also met. Again, there seems to be imperfection in the spread of the residuals; however this does not appear systematic. Therefore, as planned, linear regression analyses will be presented.

#### Regression analysis

Although Child and Adult EA were highly correlated, only child EA was associated with IF and IF (NA) and subsequently included in the analysis. Due to collinearity, only the composite child EA score was included in the regression model, that is, child responsiveness and child involvement were not added separately. Given that age was associated with child EA, this was also included in the regression analyses. Carer non-intrusiveness was also included since it was significantly associated with IF & IF (NA). A multivariate regression analysis, with IF as the dependent variable, was significant  $p < 0.001$  and explained 28% of the variance. Child EA was significantly associated with IF,  $\beta = -.51$ ,  $t(54) = -3.77$ ,  $p < .001$ . Table 4 shows the results of the regression analyses predicting IF.

**Table 4: Summary of regression results (n=55)**

Variable	B	Std Error	$\beta$	t
Age	.01	.02	.05	.43
Non-intrusiveness	-.03	.06	.06	-.43
Child EA	-.13	.03	-.51	-3.77*

\* significant at the 0.01 level.

a. outcome variable: IF.

For the analysis of the non-attached IF subgroup, IF (NA), non-hostility was added to the model because this was only marginally non-significant in the univariate analyses. A multivariate regression analysis showed that this model was significant  $p = 0.001$  and explained 30% of the variance. Child EA was a significant predictor of IF (NA),  $\beta = -.48$ ,  $t(54) = -3.50$ ,  $p = .001$ . Table 5 provides a summary of the model.

**Table 5. Summary of regression results (n=55)**

Variable	B	Std Error	$\beta$	t
Age	.00	.02	.01	.08
Non-intrusiveness	-.02	.08	-.04	-.26
Non-hostility	-.12	.12	-.12	-.89
Child EA	-.14	.04	-.48	-3.50*

\* significant at the 0.01 level.

b. outcome variable: IF (NA)

## **Discussion**

The results of this study showed that carer emotional availability was not associated with indiscriminate friendliness in maltreated children, supporting the null hypothesis. This is consistent with Zeanah and Smyke's (2008) conclusion that quality of care is not associated with IF, although one carer factor was associated with IF which will be discussed in due course. These findings are also contradictory to previous studies that showed that adult sensitivity and adult EA predicted IF (Van Den Dries et al, 2012; Garvin et al, 2012).

There were methodological differences between these studies. This study used a semi-structured interview (Smyke, Dumitrescu & Zeanah, 2002) to assess IF whereas Van Den Dries et al (2012) used a multiple choice carer questionnaire and Garvin et al (2012) used a semi-structured interview by a different author. It seems unlikely that differences in measurement would explain the contrasting results. One would expect that a semi-structured interview might be more sensitive, and thus more

likely to detect an effect. Furthermore, Zeanah and Smyke (2008) suggest that there is convergence amongst different measures of IF.

It seems more likely that this result is due to differences in sample size. It is worth noting that all carers were highly sensitive within the sample and thus differences may have been more difficult to detect. Garvin et al (2012) reported a small effect size of  $r=-.16$  with a sample size of 121. This is similar to the effect size reported in this study of  $r=-.14$ . It could be argued that a larger sample may have found a significant effect, however the clinical implication of the strength of the association merits discussion. Both Garvin et al (2012) and this study found that the strength of this relationship was small. Therefore, when considering the clinical salience of this variable, it is clear that carer EA is insufficient when considered alone in relation to indiscriminate friendliness. This study observed that non-intrusiveness was associated with IF, which was also significant when non-attachment was also considered. In other words, carers who were more intrusive were more likely to report indiscriminate friendliness. This would support our hypothesis that non-intrusiveness was associated with IF, which was based on the findings by Garvin et al (2012) and would imply that this aspect of care-giving is indeed important. However, the strength of this association would again suggest that 'other' factors need to be considered.

This study did not find an association between carer structuring and IF, which is in contrast to Garvin et al's (2012) finding. Again, this might reflect differences in sample size, as the Garvin et al sample was more than double the sample used in this study. It is also possible, however, that there might be differences in the reliability of EA ratings. This study was not able to second rate EA and therefore reliability might have been compromised, although the rater was approved by Biringer following a more stringent reliability test. Another explanation might be cultural differences between samples, which could explain differences in the observed care-giving. Garvin et al (2012) used an American sample, whilst this study comprised a sample from Glasgow (UK). One could speculate that models of care-giving are likely to be culturally specific and therefore observed variables might differ slightly dependent upon the study population.

Indeed this cultural aspect might explain our finding that carer non-hostility was trended towards non-significance, in the context of non-attachment. Non-hostility was generally high within the sample; however, some carers scored lower because they 'mocked' the child. For example, a negative statement said in a 'joking' manner would reduce the carer's non-hostility score. Despite the sample's high scores in non-hostility, a relationship was still observed. This finding further supports the importance of quality of care. It is interesting to note that non-hostility was only marginally non-

significant when IF was described in addition to a lack of preference for a single carer, IF (NA). It could therefore be argued that this factor is only important in the context of attachment, rather than IF. It would have been of interest to compare potential differences between children who were attached and not attached, across IF. Unfortunately, this was out with the scope of this study.

Consistent with Van Den Dries et al (2012), this study found a negative association between Child EA and IF which supports the experimental hypothesis. Children who were indiscriminately friendly were less responsive to, and involving of, a sensitive carer. This finding integrates with the superficial and nonreciprocal descriptions of interactions with children who display IF (Bruce et al, 2009). Contrary to Garvin et al (2012) this study found that while child and adult EA were correlated, child EA was distinctly associated with IF. This supports Biringen's (1998) suggestion that child and adult factors may be more distinct when the dyad does not have a shared history. Furthermore, child EA was a unique predictor of IF when child's age and carer non-intrusiveness were controlled for. This interesting finding would suggest that adult-child interactions are important in relation to IF. One would speculate that children who are less responsive or involving of carers induce an intrusive response from carers. Therefore, post-adoption/fostered care-giving may be insufficient when considered alone but perhaps should be seen within the context of a dynamic relationship.

Limitations and suggestions for future research.

Several limitations should be considered when interpreting the findings of this study. The cross-sectional design limits the conclusions that can be drawn in relation to causality. Similar studies in future may wish to use a prospective design that would allow inference of causality. The study had a small sample size, which is likely to have had insufficient power to detect an effect of carer EA. Future research may wish to refer to the effect sizes reported here to inform sample size.

Another limitation of this study was the lack of a second rater to verify reliability of the EA ratings. This has implications for the internal reliability of the EA scale ratings. However, the author of the EA Scales approved the assessor following extensive training and using a more stringent, than usual, test of reliability. Furthermore, in a recent review of the EA scale, psychometric properties of the scales' validity and inter-rater reliability are provided (Biringen et al, 2014). The review found high intra-class correlations between observers. Nevertheless, inter-rater reliability was not available for this study and this should be considered in the interpretation of this study's findings.

Another limitation is the lack of information regarding early life experiences of the infants included, although this is a common methodological inadequacy of studies of maltreated children (Juffer et al, 2011).

Finally, this study looked at a narrow set of variables in relation to IF which only explained a third of the variance. This does not capture the broader and complex nature of indiscriminate friendliness. There is likely to be other 'other' factors that affect the persistence/offset of IF and future research should explore these.

Given the potential for intervention, future studies may also wish to test the potential interaction between child and carer relational factors and their relationship with indiscriminate friendliness. This would inform the development of interventions. Indeed, other studies might wish to explore the amelioration of IF through intervention that focuses on the child-carer relationship.

### **Conclusion**

Child emotional availability predicts indiscriminate friendliness in maltreated children, even when other associated factors (age and carer non-intrusiveness) are controlled for. Carer emotional availability was not related to IF in this sample; however a specific care-giving factor (non-intrusiveness) was associated with indiscriminate friendliness. Future studies may wish to explore the amelioration of indiscriminate friendliness through an intervention focusing on the carer-child relationship.

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**Chapter 3: Advanced Clinical Practice Placement I: Reflective Account  
(abstract only)**

Tolerating uncertainty: a developmental perspective of working with complex  
cases

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*Submitted in part fulfilment of the requirements for the Degree of Doctorate in Clinical*

*Psychology*

## **Abstract**

Introduction: This account reflects on my professional development across training in relation to managing my anxiety, in particular my ability to “tolerate uncertainty” when working with complex cases as well as to my development of competencies in clinical practice. I draw upon experiences throughout my training, comparing and contrasting previous reflections regarding complex cases. ‘The Matrix’ (Scottish Government, 2008) acknowledges the ‘gaps’ in the literature about complex cases and the need for Psychologists to “draw upon their expert knowledge of psychological theory” to formulate these cases. This guidance assumes the expertise of the Clinical Psychologist, which can seem daunting for the practitioner.

Reflection: I draw upon several models of reflection and a model of supervision, as well as professional practice guidelines to structure my reflections. I consider my thoughts and feelings during and following events and how I evaluated these experiences. I highlight points of learning that have formed my knowledge in practice and how this has developed during my training.

Conclusion: Writing this account has allowed me to explicitly evaluate the development of my “critical lens” and subsequent therapeutic competency (Schön, 1991). The process of reviewing my development has allowed me to identify how and why this may be the case. As well as my individual development, the process of writing this account has made me consider the role of Clinical Psychology in relation to working with complex cases. I think it is important to advocate our role in being able to formulate complex cases given our extensive training and unique knowledge of psychological theory.

**Chapter 4: Advanced Clinical Practice Placement II: Reflective Account  
(abstract only)**

New ways of working: a reflective account

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*Submitted in part fulfilment of the requirements for the Degree of Doctorate in Clinical  
Psychology*

## **Abstract**

Introduction: This account reflects on my experiences of providing consultation and training within a multi-agency context. In particular, I focus on the processes of this and my subsequent development in working this way. I draw upon two experiences within an advanced practice placement to reflect on my experiential learning. I reflect on this in relation to the increased expectation for Clinical Psychologists to be “innovative” in how services can increase access to psychological therapies with a finite resource (‘The Matrix’, Scottish Government, 2008) and the barriers to working in this “New Way” (BPS, 2007).

Reflection: I draw upon several models of reflection and BPS professional guidelines to structure my reflections. I consider my thoughts and feelings during and following events and how I evaluated these experiences. I highlight points of learning that have formed my knowledge in practice.

Conclusion: Writing this account has allowed me to evaluate the development of my competency in fulfilling the diverse role of the Clinical Psychologist. The process of reviewing my development has allowed me to identify how and why this may be the case. As well as my individual development, the process of writing this account has made me consider the role of Clinical Psychology in relation to increasing availability of psychological therapies. I think it is important to advocate our role as experts in psychological theory and that this can be useful in a variety of contexts out with therapy, including service design, team functioning, and indirect working e.g. supervision/teaching/consultation.

## Appendix 1.1 - Instructions for Authors for Submission to Infant Mental Health Journal

### Author Guidelines

The Infant Mental Health Journal (IMHJ) is the official publication of the World Association for Infant Mental Health (WAIMH) and is copyrighted by the Michigan Association for Infant Mental Health.

#### Information for Contributors

Reflecting the interdisciplinary nature of the field, its international focus and its commitment to clinical science, the IMHJ publishes research articles, literature reviews, program descriptions/evaluations, clinical studies, and book reviews on infant social–emotional development, caregiver–infant interactions, and contextual and cultural influences on infant and family development. In addition, there is particular interest in neurobiological organization, longitudinal evidence of early preventive-intervention effectiveness, assessment during infancy and early childhood, and those conditions that place infants and/or families at risk for less than optimal development. The Journal is organized into three sections: Research and Prevention/Intervention Studies, Clinical Case Studies and Perspectives, and Book Reviews. The first section on Research and Intervention Studies involves peer reviewed traditional research journal models. However, the Clinical Case Studies and Perspectives section allows for more diversity both in types of submissions and through the peer review process. This increased flexibility provides the opportunity to expand both the interdisciplinary and international scope of the Journal. The Book Review Editor screens books that are received by the Journal and requests a review from an appropriate person. The book reviews are then reviewed by the Book Review Editor and the Journal Editor. The Journal welcomes a broad perspective and scope of inquiry into infant mental health issues and has an interdisciplinary and international group of associate editors, consulting editors and reviewers who participate in the peer review process. In addition to regular submissions to the Journal, the intent is to publish two special issues or sections each year that may be guest edited and which provide an in-depth exploration through a series of papers of an issue that may be of particular interest to the readers of the Journal. The Journal also publishes special sections within an issue that focus on a highly defined topic. Please submit requests for special issues directly to the Editor. MANUSCRIPTS for submission to the *Infant Mental Health Journal* should be forwarded to the Editor as follows:

1. Go to your Internet browser (e.g., Netscape, Internet Explorer).
2. Go to the URL <http://mc.manuscriptcentral.com/imhj>
3. Register (if you have not done so already).
4. Go to the Author Center and follow the instructions to submit your paper.
5. Please upload the following as separate documents: the title page (with identifying information), the body of your manuscript (containing no identifying information), each table, and each figure.
6. Please note that this journal's workflow is double-blinded. Authors must prepare and submit files for the body of the manuscript that are anonymous for review (containing no name or institutional information that may reveal author identity).
7. All related files will be concatenated automatically into a single .PDF file by the system during upload. This is the file that will be used for review. Please scan your files for viruses before you send them, and keep a copy of what you send in a safe place in case any of the files need to be replaced.

Style must conform to that described by the American Psychological Association *Publication Manual*, Sixth Edition, 2009 (American Psychological Association, 750 First Street, N.E.,

Washington, D.C. 20002-4242). Authors are responsible for final preparation of manuscripts to conform to the APA style. In addition, authors must provide a statement of conflict of interest that will be published on the title page of the article, as well as an explanation of the contributions each author made to the work described in the submitted paper.

Manuscripts are assigned for peer review by the Editor or Associate Editor(s) and are reviewed by members of the Editorial Board and invited reviewers with special knowledge of the topic addressed in the manuscript. The *Infant Mental Health Journal* requires submissions to conform to the Sixth Edition of the American Psychological Association and its policies on conflict of interest, authorship, and ethical compliance. The Editor retains the right to reject articles that do not meet conventional clinical or scientific ethical standards. Normally, the review process is completed in 3 months. Nearly all manuscripts accepted for publication require some degree of revision. There is no charge for publication of papers in the *Infant Mental Health Journal*. The publisher may levy additional charges for changes in proofs other than correction of printer's errors. Proofs will be sent to the corresponding author and must be read carefully because final responsibility for accuracy rests with the author(s). Author(s) must return corrected proofs to the publisher in a timely manner. If the publisher does not receive corrected proofs from the author(s), publication will still proceed as scheduled.

Additional questions with regard to style and submission of manuscripts should be directed to the Editor: Hiram E. Fitzgerald, PhD, at [IMHJ@msu.edu](mailto:IMHJ@msu.edu).

## Appendix 1.2: Reasons for exclusion following title & abstract screening.

### Reasons

1. Unrelated to question; does not focus on Indiscriminate Friendliness, RAD (disinhibited type) & factors associated with this.
2. Conference abstracts
3. Single case studies
4. Non-english journal
5. Previous reviews/book chapters/commentaries/letters
6. published prior to 2006
7. Qualitative design

**Table 1: Articles excluded following title screening**

Study	Reason?
1. Bennett (2009)	7
2. Boris (2004)	6
3. Chaffin et al (2008)	5
4. Chislom (1998)	6
5. Dozier (2000)	6
6. Follan et al (2011)	1
7. Herzog (2013)	1
8. Hinshaw-Fusilier (1999)	6
9. Hughes (2004)	6
10. Lyon et al (2008)	1
11. Marchand et al (2013)	1
12. McLaughlin et al (2010)	1
13. Minnis (2001)	6
14. Minnis et al (2013)	1
15. O'Connor et al (2000)	6
16. Perez (2011)	4
17. Prot (2013)	5
18. Raaska et al (2013)	1
19. Smolen et al (2013)	1
20. Smyke et al (2002)	6
21. Tan (2013)	1
22. Zeanah et al (2001)	1
23. Zeanah et al (2005)	6
24. Zeanah et al (2002)	6
25. Zeanah et al (2004)	6

**Table 2: Articles excluded following abstract screening**

<b>Study</b>	<b>Included/Excluded</b>	<b>Reason for Exclusion?</b>	<b>Double rated?</b>
1. Ayaz (2012)	excluded	1.	Y: 1
2. Bakersman-Krannenberg et al (2012)	excluded	1	
3. Becker-Weidman et al (2009)	excluded	1.	
<b>4. Bruce et al (2009)</b>	<b>included</b>	n/a	Y: include
<b>5. Drury et al (2012)</b>	<b>included</b>	n/a	Y: include
<b>6. Garvin et al (2012)</b>	<b>included</b>	n/a	
7. Gleason et al (2011)	excluded	1	
8. Goldwyn et al (2011)	excluded	1	
9. Groark et al (2011)	excluded	1	
10. Huang-Storms et al (2006)	Excluded	1	
<b>11. Johnson (2011)</b>	<b>included</b>	1	Y: include
12. Kocovska et al (2013)	Excluded	1	
13. Kocovska et al (2012)	Excluded	1	
14. Lyons-Ruth et al (2009)	Excluded	1	
15. McGoron et al (2012)	Excluded	1	Y: 1
16. Millward et al (2006)	Excluded	1	
17. Minnis et al (2009)	Excluded	1	Y: 1
18. Oliveira et al (2012)	Excluded	1	
19. Olsavsky et al (2012)	Excluded	2	Y: 2
<b>20. Olsavsky et al (2013)</b>	<b>Included</b>	n/a	
<b>21. Pears et al (2010)</b>	<b>Included</b>	n/a	
22. Scott-Heller et al (2006)	Excluded	3	
23. Smyke et al (2012)	Excluded	1	
24. Stafford et al (2006)	Excluded	5	
25. Stovall-McClough (2006)	Excluded	1.	
<b>26. Tarullo et al (2011)</b>	<b>Included</b>	n/a	
27. Unger (2009)	Excluded	3	

\*n/a: not applicable due to inclusion.

Y: rated by second rater

### Appendix 1.3 – Downs & Black (1998) Modified Checklist

#### *Reporting*

1. Is the hypothesis/aim/objective of the study clearly described?

yes 1  
no 0

2. Are the main outcomes to be measured clearly described in the Introduction or Methods section?  
If the main outcomes are first mentioned in the Results section, the question should be answered no.

yes 1  
no 0

3. Are the characteristics of the patients included in the study clearly described?

In cohort studies and trials, inclusion and/or exclusion criteria should be given. In case-control studies, a case-definition and the source for controls should be given.

yes 1  
no 0

4. Are the interventions of interest clearly described?

Treatments and placebo (where relevant) that are to be compared should be clearly described.

yes 1  
no 0

5. Are the distributions of principal confounders in each group of subjects to be compared clearly described? A list of principal confounders is provided.

yes 2  
partially 1  
no 0

6. Are the main findings of the study clearly described?

Simple outcome data (including denominators and numerators) should be reported for all major findings so that the reader can check the major analyses and conclusions. (This question does not cover statistical tests which are considered below).

yes 1  
no 0

7. Does the study provide estimates of the random variability in the data for the main outcomes? In non-normally distributed data the inter-quartile range of results should be reported. In normally distributed data the standard error, standard deviation or confidence intervals should be reported. If

the distribution of the data is not described, it must be assumed that the estimates used were appropriate and the question should be answered yes.

yes 1  
no 0

8. Have all important adverse events that may be a consequence of the intervention been reported? This should be answered yes if the study demonstrates that there was a comprehensive attempt to measure adverse events. (A list of possible adverse events is provided).

yes 1  
no 0

9. Have the characteristics of patients lost to follow-up been described? This should be answered yes where there were no losses to follow-up or where losses to follow-up were so small that findings would be unaffected by their inclusion. This should be answered no where a study does not report the number of patients lost to follow-up.

yes 1  
no 0

10. Have actual probability values been reported (e.g. 0.035 rather than <0.05) for the main outcomes except where the probability value is less than 0.001?

yes 1  
no 0

**External validity**

All the following criteria attempt to address the representativeness of the findings of the study and whether they may be generalised to the population from which the study subjects were derived.

11. Were the subjects asked to participate in the study representative of the entire population from which they were recruited?

The study must identify the source population for patients and describe how the patients were selected. Patients would be representative if they comprised the entire source population, an unselected sample of consecutive patient, or a random sample. Random sampling is only feasible where a list of all members of the relevant population exists. Where a study does not report the proportion of the source population from which the patients are derived, the question should be answered as unable to determine.

yes 1  
no 0  
unable to determine 0

12. Were those subjects who were prepared to participate representative of the entire population from which they were recruited?

The proportion of those asked who agreed should be stated. Validation that the sample was representative would include demonstrating that the distribution of the main confounding factors was the same in the study sample and the source population.

yes 1  
no 0  
unable to determine 0

13. Were the staff, places, and facilities where the patients were treated, representative of the treatment the majority of patients receive?

For the question to be answered yes the study should demonstrate that the intervention was representative of that in use in the source population. The question should be answered no if, for example, the intervention was undertaken in a specialist centre unrepresentative of the hospitals most of the source population would attend.

yes 1  
no 0  
unable to determine 0

***Internal validity - bias***

14. Was an attempt made to blind study subjects to the intervention they have received?

For studies where the patients would have no way of knowing which intervention they received, this should be answered yes.

yes 1  
no 0  
unable to determine 0

15. Was an attempt made to blind those measuring the main outcomes of the intervention?

yes 1  
no 0  
unable to determine 0

16. If any of the results of the study were based on “data dredging”, was this made clear?

Any analyses that had not been planned at the outset of the study should be clearly indicated. If no retrospective unplanned subgroup analyses were reported, then answer yes.

yes 1  
no 0  
unable to determine 0

17. In trials and cohort studies, do the analyses adjust for different lengths of follow-up of patients, or in case-control studies, is the time period between the intervention and outcome the same for cases and controls?

Where follow-up was the same for all study patients the answer should be yes. If different lengths of follow-up were adjusted for by, for example, survival analysis the answer should be yes. Studies where differences in follow-up are ignored should be answered no.

yes 1  
no 0  
unable to determine 0

18. Were the statistical tests used to assess the main outcomes appropriate?

The statistical techniques used must be appropriate to the data. For example non-parametric methods should be used for small sample sizes. Where little statistical analysis has been undertaken but where there is no evidence of bias, the question should be answered yes. If the distribution of the data (normal or not) is not described it must be assumed that the estimates used were appropriate and the question should be answered yes.

yes 1  
no 0  
unable to determine 0

19. Was compliance with the intervention/s reliable?

Where there was non-compliance with the allocated treatment or where there was contamination of one group, the question should be answered no. For studies where the effect of any misclassification was likely to bias any association to the null, the question should be answered yes.

yes 1  
no 0  
unable to determine 0

20. Were the main outcome measures used accurate (valid and reliable)?

For studies where the outcome measures are clearly described, the question should be answered yes. For studies which refer to other work or that demonstrates the outcome measures are accurate, the question should be answered as yes.

yes 1  
no 0  
unable to determine 0

***Internal validity - confounding (selection bias)***

21. Were the patients in different intervention groups (trials and cohort studies) or were the cases and controls (case-control studies) recruited from the same population?

For example, patients for all comparison groups should be selected from the same hospital. The question should be answered unable to determine for cohort and case-control studies where there is no information concerning the source of patients included in the study.

yes 1  
no 0  
unable to determine 0

22. Were study subjects in different intervention groups (trials and cohort studies) or were the cases and controls (case-control studies) recruited over the same period of time?

For a study which does not specify the time period over which patients were recruited, the question should be answered as unable to determine.

yes 1  
no 0  
unable to determine 0

23. Were study subjects randomised to intervention groups?

Studies which state that subjects were randomised should be answered yes except where method of randomisation would not ensure random allocation. For example alternate allocation would score no, because it is predictable.

yes 1  
no 0  
unable to determine 0

24. Was the randomised intervention assignment concealed from both patients and health care staff until recruitment was complete and irrevocable?

All non-randomised studies should be answered no. If assignment was concealed from patients but not from staff, it should be answered no.

yes 1  
no 0  
unable to determine 0

25. Was there adequate adjustment for confounding in the analyses from which the main findings were drawn?

This question should be answered no for trials if: the main conclusions of the study were based on analyses of treatment rather than intention to treat; the distribution of known confounders in the different treatment groups was not described; or the distribution of known confounders differed between the treatment groups but was not taken into account in the analyses. In non-randomised studies if the effect of the main confounders was not investigated or confounding was demonstrated but no adjustment was made in the final analyses the question should be answered as no.

yes 1

no 0  
unable to determine 0

26. Were losses of patients to follow-up taken into account?

If the numbers of patients lost to follow-up are not reported, the question should be answered as unable to determine. If the proportion lost to follow-up was too small to affect the main findings, the question should be answered yes.

yes 1  
no 0  
unable to determine 0

**Power**

27. Did the study have sufficient power to detect a clinically important effect?

yes 1  
no 0

Appendix 1.4 – Study quality ratings using Downs & Black Checklist (1998)

Study	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	Quality score
Drury et al (2012)	1	1	1	0	1	1	0	1	1	1	0	0	1	0	1	0	1	1	1	1	1	0	0	0	1	1	1	18/28
Tarullo et al (2011)	1	1	1	1	2	1	1	0	0	0	1	1	1	0	1	1	1	1	1	1	1	0	0	0	1	1	1	21/28
Johnson et al (2011)	1	1	1	1	2	1	1	0	1	0	0	0	1	0	0	1	1	1	1	1	1	0	0	0	1	1	1	19/28
Rutter et al (2007)	1	1	1	1	2	1	1	0	1	0	1	1	1	0	1	1	1	1	1	1	1	0	0	0	1	1	0	21/28
Bruce et al (2009)	1	1	1	1	2	1	1	0	1	0	1	0	1	0	0	1	1	1	1	1	1	0	0	0	1	1	1	20/28
Minnis et al (2007)	1	1	0	1	1	1	1	0	0	1	1	0	1	0	0	1	1	1	1	1	1	0	0	0	1	0	1	17/28
Van Den Dries et al (2012)	1	1	1	1	2	1	1	0	1	0	1	1	1	0	1	1	1	1	0	1	1	0	0	0	1	1	1	21/28
Garvin et al (2012)	1	1	1	1	2	1	1	0	1	0	1	1	1	0	0	1	1	1	1	1	1	0	0	0	1	1	1	21/28
Pears et al (2009)	1	1	1	1	2	1	1	0	1	0	1	1	1	0	0	1	1	1	1	1	1	0	0	0	1	1	1	21/28
Olsavsky et al (2013)	1	1	1	1	1	1	1	0	1	0	0	0	0	0	0	1	1	1	1	1	0	0	0	0	1	1	0	15/28

**WoSRES**  
**West of Scotland Research Ethics Service**

**West of Scotland REC 5**

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26 October 2010

Dr Helen Minnis  
Senior Lecturer in Child and Adolescent Psychiatry  
Section of Psychological Medicine  
Caledonia House, RHSC Yorkhill  
Dalnair Street  
Glasgow  
G3 8SJ

Dear Dr Minnis

**Study Title:** Evaluation of the New Orleans Intervention Model for  
Infant Mental Health in Glasgow  
**REC reference number:** 10/S1001/37

Thank you for your letter of 06 October 2010, responding to the Committee's request for further information on the above research and submitting revised documentation.

The further information was considered in correspondence by a sub-committee of the REC. A list of the sub-committee members is attached.

**Confirmation of ethical opinion**

On behalf of the Committee, I am pleased to confirm a favourable ethical opinion for the above research on the basis described in the application form; protocol and supporting documentation as revised, subject to the conditions specified below.

**Ethical review of research sites**

The favourable opinion applies to all NHS sites taking part in the study, subject to management permission being obtained from the NHS/HSC R&D office prior to the start of the study (see "Conditions of the favourable opinion" below).

**Conditions of the favourable opinion**

The favourable opinion is subject to the following conditions being met prior to the start of the study.

Management permission or approval must be obtained from each host organisation prior to the start of the study at the site concerned.

For NHS research sites only, management permission for research ("R&D approval") should be obtained from the relevant care organisation(s) in accordance with NHS research governance arrangements. Guidance on applying for NHS permission for research is available in the Integrated Research Application System or at <http://www.rdforum.nhs.uk>.

*Sponsors are not required to notify the Committee of approvals from host organisations.*

**It is the responsibility of the sponsor to ensure that all the conditions are complied with before the start of the study or its initiation at a particular site (as applicable).**

### Approved documents

The final list of documents reviewed and approved by the Committee is as follows:

<i>Document</i>	<i>Version</i>	<i>Date</i>
Investigator CV		
Protocol	2	05 October 2010
Routine data information sheet	1	15 June 2010
Research paper: "Randomisation in trials"		
REC application		28 June 2010
Covering Letter		28 June 2010
GP/Consultant Information Sheets	1	15 June 2010
Response to Request for Further Information		06 October 2010
Participant Information Sheet: Parents	3	05 October 2010
Participant Information Sheet: and Consent form: Parents (The Family Intervention study)	1	15 June 2010
Participant Information Sheet: Foster Carers	2	05 October 2010
Referees or other scientific critique report		

### Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees (July 2001) and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

### After ethical review

Now that you have completed the application process please visit the National Research Ethics Service website > After Review

You are invited to give your view of the service that you have received from the National Research Ethics Service and the application procedure. If you wish to make your views known please use the feedback form available on the website.

The attached document "*After ethical review – guidance for researchers*" gives detailed guidance on reporting requirements for studies with a favourable opinion, including:

- Notifying substantial amendments
- Adding new sites and investigators
- Progress and safety reports
- Notifying the end of the study



## Appendix 2.2 – R&D approval

**From:** Reid, Lorraine [mailto:Lorraine.Reid2@ggc.scot.nhs.uk]  
**Sent:** 28 August 2013 12:29  
**To:** Minnis, Helen  
**Subject:** R&D Ref: GN10CO273 - Minor Amendment dated 06/08/13

Dear Dr Minnis

**R&D Ref:** GN10CO273  
**Ethics Ref:** 10/S1001/37  
**Chief Investigator:** Dr Helen Minnis  
**Project Title:** Evaluation of the New Orleans Intervention Model for Infant Mental Health in Glasgow  
**Protocol I.D:** V5 dated 20/02/12  
**Amendment:** Minor dated 06/08/13  
**Sponsor:** NHS GG&C Health Board

I am pleased to inform you that R&D have reviewed the above study Amendment and can confirm that Management Approval is still valid for this study.

Reviewed Documents:	Version	Dated
Amendment summary email re: additional study team member Leighanne Love	Not versioned	06/08/13
Investigator CV	V2	18/07/13
Amendment summary email re: additional study team member Christine Clark	Not versioned	08/08/13
Investigator CV	Not versioned	Sept 2012

**Please Note:** Leighanne Love and Christine Clark have now been added to the R&D research database as a members of the investigational team.

I wish you every success with this research project.

Yours sincerely

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Appendix 2.3 – Parent participant information sheet for NIM trial.

**Confidentiality:**

All information will be stored according to the Data Protection Act and kept in strict confidence within the research and clinical team, except in the unlikely event of concerns about safety of the child or of others.

**Do I have to take part?**

You do not have to take part in the study and, if you decide not to, this will not affect your right to receive a service. Anyone who decides not to take part will be offered our usual services.

**Why is the study important?**

We hope that these two new services will help children's development when they are placed in foster care. This study will help us find out how best to support Glasgow's children.



If you need independent advice about the study, please contact  
Dr. Lucy Thompson  
**0141 201 9239**



Parent Participant Information Leaflet (version 4.0; 13.2.2012)



New Services for  
Children in Foster Care



Information for parents

## An Invitation:

We would like to invite you to take part in a research project. Before deciding about taking part, it is important that you understand what we want to do and why. Please take the time to read the information. Discuss it with your supervising social worker, or **phone us on 0141 201 9239** if you have any questions.

### What is the study?

In Glasgow, health and social work are working together to improve services for children coming into foster care. We hope to compare two new services to find out which works better for children's development. We are inviting all Glasgow families to take part if they have a child aged between 6 months and 5 years when they come into foster care. Each family who takes part will be offered either a service from the Family Assessment and Contact Service (FACS) or the Glasgow Infant and Family Team (GIFT).

***We don't know what works best and want to be as fair as possible, so families will be chosen by a computer which has no information about individual families - a bit like tossing a coin.***

### What will the two new services be like?

FACS and GIFT have different approaches and different teams, but both services will meet with families regularly and put them in touch with any services they might need.

Families will be asked to meet people who understand about relationships between parents and children, usually at least once a week for a few months. They will also have the chance to talk about their own problems.

Help will also be offered with other problems that might be making it difficult for your child to come home, sometimes by asking other services to help.

We think it is very important to find out whether the GIFT or the FACS service is better for children.

### How will the researchers find out about the development of the child in your care?

**Parents or carers** will be asked about their child's development.

**Children** will be asked to complete some puzzles.

**Video:** We will make a videotape of your child – both at the clinic and in the foster placement. This lets us study the tape later and get a better understanding about how your child is developing.

### How much of your time will this take?

This will involve two assessments one at home and one at a clinic, when your child comes into foster care and again one year later. If the child is in your care, each assessment will take 1-2 hours.



Appendix 2.4 – Foster carer participant information sheet for NIM trial.

**Confidentiality:**

All information will be stored according to the Data Protection Act and kept in strict confidence within the research and clinical team, except in the unlikely event of concerns about safety of the child or of others.

**Your expenses:**

All families will be given £20 to cover travel expenses for the clinic assessments.

**Do I have to take part?**

You do not have to take part in the study and, if you decide not to, this will not affect your right to receive a service. Anyone who decides not to take part will be offered our usual services.

**Why is the study important?**

We hope that these two new services will help children's development when they are placed in foster care. This study will help us find out how best to support Glasgow's children.



If you need independent advice about the study, please contact  
Dr. Lucy Thompson  
**0141 201 9239**



Foster Carer Participant Information Leaflet (version 4.0; 13.02.2012)

New Services for Children in Foster Care



Information for carers

## An Invitation

The birth family of

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has given consent for the child to take part in a research study. We would like to invite you to take part in certain parts of this study. Before deciding, it is important that you understand what is being done and why. Please take the time to read the following information. Discuss it with your supervising social worker, or **phone us on 0141 201 9239** if you have any questions.

### What is the study?

In Glasgow, health and social work are working together to improve services for children coming into foster care. We hope to compare two new services to find out which works better for children's development. We are inviting all Glasgow families to take part if they have a child aged between 6 months and 5 years when they come into foster care. Each family who takes part will be offered a service from either the Family Assessment and Contact Service (FACS) or the Glasgow Infant and Family Team (GIFT).

*We don't know what works best and want to be as fair as possible, so families will be chosen by a computer which has no information about individual families - a bit like tossing a coin.*

### What will the two new services be like?

FACS and GIFT have different approaches and different teams, but both services will meet with families regularly and put them in touch with any services they might need.

Families will be asked to meet people who understand about relationships between parents and children, usually at least once a week for a few months. They will also have the chance to talk about their own problems.

Help will also be offered with other problems that might be making it difficult for the children in your care to go home, sometimes by asking other services to help.

We think it is very important to find out whether the GIFT or the FACS service is better for children.

### How will the researchers find out about the development of the child in your care?

**Parents or carers** will be asked about the child's development.

**Children** will be asked to complete some puzzles.

**Video:** We will make a videotape of the child – both at the clinic and in the foster placement. This lets us study the tape later and get a better understanding about how the child is developing.

**How much of your time will this take?** This will involve two assessments one at your home and one at a clinic, when the child comes into foster care and again one year later. If the child is in your care, each assessment will take 1-2 hours.



Appendix 2.5 – Participant consent form.



▶ You do not have to take part in the project and, if you decide not to, this will not affect the care you or your child receives.

▶ Make sure you understand everything about the project before you sign the consent form. If you have any questions, please contact *Dr. Helen Minnis* on:

▶ **0141 201 9239**

▶ I have read and understood the information sheet and have had the chance to ask questions.

▶ I understand that I do not have to take part, that I am free to withdraw at any time without giving any reason, and without my child's medical care and legal rights being affected.

▶ I agree to the making of a video of my child's assessment

▶ I am happy for the research team to review data stored on me and my child in other parts of health or social services (e.g. GP records)

▶ I am happy for my GP to be informed about my family's involvement in the study

▶ I am happy to take part in the *Best Services Trial*

▶ I would be happy to be contacted for future research studies.

\_\_\_\_\_  
Name of participant

\_\_\_\_\_  
date

\_\_\_\_\_  
signature

\_\_\_\_\_  
Name of child



If you need independent advice about the study, please contact Dr. Lucy Thompson on 0141 2019239





## Your Routine Data

In Scotland we routinely collect a range of information, called Routine Data, on EVERY CITIZEN including information about births, deaths, child protection, schooling and hospital visits. This can be a very useful way of following up how people are doing over time without having to bother them with face-to-face assessments.

Please tick this box if you DO NOT want us to have access to this information in future.

### **Abstract**

Background: Indiscriminate friendliness (IF) refers to overly familiar behaviour that is socially inappropriate. This phenomenon has been observed in populations of maltreated children. IF has been linked to early life experiences, specifically the quality of the carer-infant relationship. However, little is known about which aspects of this relationship are important. Emotional availability (EA) refers to the degree to which mother and infant are able to respond to one another's emotional signals. One previous study found an association between EA and IF in a sample of adopted Chinese children, however, this study did not consider all important elements of EA as described by Biringen (2000). Aims: The aim of this study is to explore the relationship between EA and indiscriminate friendliness. Methods: Participants will be drawn from an ongoing study which looks at relationships between maltreated children and their foster carers. Mealtime and playtime videos of carer-infant dyads will be analysed using the EA scales and compared to data concerning IF. Applications: This study will inform future research and developments in clinical practice related to EA and IF.

### **Introduction**

Reactive Attachment Disorder (RAD) is believed to result from pathogenic care; a persistent neglect of the child's basic emotional or physical needs or repeated changes in primary caregiver that prevents the formation of a discriminatory attachment (APA, 1994). A core characteristic of this disorder is indiscriminate friendliness (IF) which refers to inappropriate sociability and has been observed in high-risk child populations (Chisholm, 1998). A working definition is:

"The willingness to approach and interact with unfamiliar adults in a familiar fashion (e.g., making personal comments to, initiating physical contact with, and being willing to leave with the adult)", Pears et al. (2010, p64).

IF was first observed in a study that compared Romanian institutionalised children with non-institutionalised controls & early adopted controls where indiscriminate friendliness was significantly higher in the institutionalised group (Chisholm, 1998). Chisholm also found that there were no significant differences in attachment security amongst the three groups, according to carer report. Other studies replicated these early findings (Bruce et al., 2009; O'Connor et al., 2003; Bakermans-Kranenburg et al., 2012) which suggests that IF is not captured within traditional

secure/insecure attachment types. Minnis et al. (2006) argue that, as a result of inconsistent care giving, these children continue to be haphazard in their displays of affection, despite being able to develop a preference for a single attachment figure. This suggests that IF is more common and persistent than security seeking behaviour

While indiscriminate friendliness has been well-documented in post-institutionalised children, Bruce et al (2009) found no differences in indiscriminate friendliness between institutionalised children and children in foster care. Recent studies have explored this phenomenon in home-reared children that have experienced pathogenic care. Lyons-Ruth et al (2009) found that indiscriminate friendliness was associated with maltreatment, later childhood aggression and hyperactivity by age five. These findings were maintained when attachment security/organisation were controlled for. Pears et al (2010) found that foster children exhibited higher levels of indiscriminate friendliness than controls. They also found that those foster children who had experienced a greater number of foster caregivers had poorer inhibitory control, which was in turn associated with greater indiscriminate friendliness. There are clear concerns with regards to risk for children who present with these difficulties, as well as concerns for potential problems later in life (Roy, Rutter & Pickles, 2004). Therefore it would be salient to explore potential causal factors that could inform interventions.

Given the high prevalence of this phenomenon in maltreated children, explanations as to its aetiology have focussed on parent-infant interaction. Indeed, quality of care giving has long been considered predictive of attachment. Bornstein et al (2012) note that infants are more distressed during maternal still face experiments than during physical separation. Ultimate explanations of indiscriminate behaviour have thus focussed on this early relationship. Chisholm (1998) posited that IF would be adaptive in environments where care is inconsistent as it increases the likelihood that adults will respond positively. However, this does not explain what aspects (if any) of positive interaction are important. EA refers to the degree to which mother and infant are able to respond to one another's emotional signals and has been linked to several aspects of child development (Bornstein et al., 2012). Minnis et al (2006) hypothesise a framework of 'intersubjectivity' as a potential explanatory variable, wherein parent-infant interactions facilitate an internal model of social interaction from which future sociability is guided. According to this theory, concordant intersubjectivity is crucial for brain development and thus environments that lack opportunities for this experience, e.g. institutional care or emotional neglect, will induce the infant to seek these

experiences “at all costs”. One may hypothesise that EA represents the extent to which parent and infant are able/available to engage in the interactions that would facilitate concordant intersubjectivity.

However, there is, as yet, limited research testing this hypothesis. One study examined the relationship between EA and IF (Van den Dries et al, 2012). In a short-term longitudinal design, this study compared 50 internationally adopted children from institutions in China to 42 children fostered in China. They measured IF using five multiple choice questions that were thought to reflect it. They found that foster carers who scored higher on maternal sensitivity ratings reported less IF. They also found that children in foster care were more responsive than post-institutionalised children. These results would suggest that maternal sensitivity and child responsiveness may interact to predict IF. However, a more powerful measure of IF may capture a greater effect size. Furthermore this study did not consider all the reciprocal elements of EA as described by Biringen (2000) e.g., parental sensitivity; parental structuring; parental non-intrusiveness; and parental non-hostility, as well as child responsiveness to the parent and the child’s involvement of the parent in interactions.

### **Aims & Hypotheses**

To establish if there is a relationship between EA and IF in a group of previously maltreated infants. Furthermore, this study seeks to establish which aspects of EA predict IF in this population.

H1 states that there will be a negative association between emotional availability and indiscriminate friendliness.

Given previous evidence supporting an association between maternal sensitivity and child responsiveness, H2 states that child responsiveness and parental sensitivity will be significant predictors of indiscriminate friendliness in a population of maltreated children.

### **Plan of Investigation**

From January 2011, a pilot New Orleans Intervention Model (NIM) was implemented across the city of Glasgow. This is a complex intervention that aims to enable children that are accommodated to return to their birth families. To assess the effectiveness of this approach, a randomised control trial of NIM compared to treatment as usual is on-going, see appendix 4.

Outcome data from this trial include videos of carer-infant interactions. This study will make use of these video interactions by analysing them using measures of EA, and IF.

### Participants

Mealtime and playtime videos of carer-infant dyads recorded for an ongoing RCT will be analysed. Families participating in this RCT have consented to their videos being used for the purposes of research. A sub-selection of video data will be selected based on availability and criteria for use of the EA scales. Seventy such video vignettes are currently available for analysis. Videos will be at least 10minutes in duration and contain both carer & infant in an interaction. Videos that do not meet these criteria will be excluded from further analysis. Demographic data from the NIM RCT will be available for the present study.

### Exclusion/inclusion criteria

Participants will be maltreated children, under the age of 5 and their foster carers. For the purposes of the NIM RCT maltreatment was defined as serious child protection concerns that resulted in residential care in Glasgow. Non-maltreated infants will not be included. Families recruited to the NIM RCT were required to be in care for at least 1 month but no longer than 3 months. Children whose parents were unavailable for intervention (e.g. due to death or imprisonment) were excluded from NIM as were children with profound learning disabilities.

### Recruitment procedures

Participants have been recruited already to the NIM RCT and mealtime/playtime videos were recorded as part of this study across two time points, see appendix 4 for details. Videos collected at time 1 will be used for the purposes of this study, subsequently reducing any post treatment bias in the data.

### Measures

- **Emotional Availability Scale** (Biringen, Robinson, & Emde, 1998) is an observational measure that assesses reciprocal carer – child interactions. The four caregiver components include sensitivity, structuring, nonintrusiveness, and nonhostility; two scales measure the child's responsiveness to the caregiver and involvement of the caregiver. This measure is based on observations of parent-child interactions and use of the EA scale requires training from the scale author. Biringen et al (1998) report good inter-rater reliability rates for the

EA scale (pearsons  $r = 0.8$ ). There is evidence that the scale has good construct validity when compared to accepted measures of attachment. (Biringen, 2000; Ziv et al, 2000). The EA scale is also reliable over time (Bornstein et al, 2006). The first author will be trained in the use of this scale via distance learning. The training is 3 days online plus a Skype contact and approximately 7-10 hours of case practice.

- **Disturbances of attachment interview (DAI)** is the gold standard assessment tool used to assess indiscriminate friendliness (Smyke & Zeanah, 1999). This measure was completed by clinicians involved in the ongoing NIM RCT and the data will be used in this study. The DAI is a semi-structured interview designed to be administered by clinicians to caregivers who know the child well. The authors state that this interview should allow for clinician flexibility to elicit further information. The scoring is completed at the close of the interview based upon responses provided. The measure has been shown to identify signs of RAD reliably in maltreated children (Zeanah et al, 2004). It converges with similar measures of RAD (Smyke et al., 2002; Zeanah et al., 2002), and it diverged from measures of aggression (Zeanah et al, 2005).

#### Research Procedures & Design.

In a cross-sectional design, ten minute mealtime and playtime videos of foster carer-infant interactions will be rated using an EA scale and will be compared to data measuring indiscriminate friendliness using the DAI. The EA scale delineates a coding measure and this will be completed by the main researcher. Ten minute videos are expected to take 30 minutes to assess.

#### Data Analysis

Data will be analysed using SPSS version 18. Correlational analyses will determine which constructs will be included in the regression model. The predictive power of the variables will be explored using a multiple regression model where indiscriminate friendliness is the outcome measure. The EA scales delineate six constructs that will be considered for inclusion in the regression analyses: parental sensitivity; parental structuring; parental non-intrusiveness; and parental non-hostility, child responsiveness to the parent and the child's involvement of the parent in interactions. The EA scale also provides a composite EA score that will also be considered in the model.

#### Justification of sample size

One previous study reported a small-medium effect size ( $r = 0.25$ ) for an association between maternal sensitivity (a sub-construct of EA) and indiscriminate friendliness (Van den Dries, 2012). A sensitivity analysis was conducted using G\*power 3.1 with an effect size of  $f^2 = 0.067$  and conventional significance of  $\alpha = 0.05$  and  $\beta = 0.8$ . Using the seven predictor variables provided from the EA scale (the 6 variables mentioned above plus an EA composite score) the analysis estimated a sample size of 209 participants to adequately evaluate the experimental hypothesis. It would not be feasible to access this sample size for the purposes of this study. It should be noted that this study proposes the use of a semi-structured interview as a measure of indiscriminate friendliness; a more sensitive measure than the multiple choice items used by Van den Dries (2012). Given that this is the first study in the UK to consider the association between EA and indiscriminate friendliness, it seems reasonable to consider this experiment as a pilot study that will inform future research. A correlation matrix will be completed prior to analysis to reduce the number of predictor variables used and enhance power. According to Harris's (1985) formula, 10 participants per variable would be appropriate to detect a medium effect size, when there are 6 predictors or more (Van Voorhis & Morgan, 2007). Therefore the study intends to recruit a sample size of 70 participants.

#### Settings and equipment

Equipment to view the videos will be used within the academic base at Caledonia House.

#### **Health and safety issues**

##### Researcher safety issues

Videos will be rated within the academic base at Caledonia House, posing no risk to the researcher.

##### Participant safety issues

Since the researcher will not have direct contact with participants, there are no safety issues pertaining to participation in the study.

#### **Ethical Issues**

Although ethical approval has been granted for the ongoing RCT, an application will be made to GG&C NHS REC for a substantial amendment to the original research protocol. For details on the

information provided to RCT participants, see appendix 5. Management approval will subsequently be sought from NHS GG&C R&D. All data will be anonymous and held securely on an NHS computer.

### **Financial issues**

There is a training cost for the use of the E.A. scale (\$520 per person). The training includes use of the scale, website and distance learning on how to rate the different aspects of the scale. The academic team at Caledonia House have agreed to cover any costs that exceed the £200 available from the University to support the MRP.

### **Timetable**

- Submission to ethics - July 2013.
- Distance learning of rating scale – September-November 2013.
- Rating of participant videos – November 2013 – March 2014.
- Data analysis and write up - from April 2014.

### **Practical Applications**

The results of this study will provide information about the nature of indiscriminate friendliness in maltreated children. Specifically, it will generate comparable data for validating future measures of emotional availability, as well as effect sizes for future studies exploring the relationship between emotional availability and indiscriminate friendliness. Ultimately, this study may provide insight into the aetiology of indiscriminate friendliness and subsequent interventions.

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