

**Assessing the Quality of the Parent – Infant
Relationship: Reliability and Validity of the
Parent - Infant Relational Assessment Tool
(PIRAT) Global Scales**

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“A thousand times the feeling has existed that what was wanted was created and was found to be there. From this develops a belief that the world can contain what is wanted and needed, with the result that the baby has hope that there is a live relationship between inner reality and external reality, between innate primary creativity and the world at large which is shared by all.”

*D.W. Winnicott (1964, p. 85)
‘Further Thoughts of Babies as Persons’*

Declaration

I, Susanne Dorothea Hommel, confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

London, September 2017

Signature

Abstract

The PIRAT Global Scales (Broughton, Hommel & the Parent-Infant Project, 2016) have been manualised to provide a global assessment of the infant-parent and parent-infant relationship up to the age of 2 years. They offer a shared language and understanding among health professionals from various disciplines as to what constitutes risk and resilience. Preliminary research into inter-rater reliability showed that PIRAT Global Scales provide a reliable assessment of the overall relational quality and can be used as a screening tool to identify infants at risk (Hommel, Broughton, & Target, 2014, 2015, 2016).

The study evaluates PIRAT Global Scales' psychometric properties based on the standardised 3.5 day reliability training. Further research evaluates PIRAT Global Scales' reliability and validity on a larger sample of mother-infant dyads.

The PIRAT Global Scales reliability and validity study uses data from a Parent-Infant Psychotherapy Randomized Controlled Trial. The research establishes PIRAT Global Scales' reliability, in particular internal consistency and inter-rater reliability. Furthermore, the study establishes PIRAT Global Scales' validity compared to a number of widely used, well-validated measures of parent-infant interaction, such as the Emotional Availability Scales (EAS; Biringen, 2000), the Coding Interactive Behavior (CIB; Feldman, 1998) and the CARE-Index (Crittenden, 2001) and indicators of risk, such as 'Disorganized Attachment' (Main & Solomon, 1986, 1990), low 'Reflective functioning on the Parent Development Interview' (PDI-R; Slade, Aber, Berger, Bresgi, & Kaplan, 2003) and high 'Parental Stress' assessed by the Parenting Stress Index – Short Form (PSI-SF; Abidin, 1995).

PIRAT Global Scales are shown to be reliable and valid, and therefore enable the user to set their observations within a reliable and validated assessment framework of the parent-infant relationship.

Implications of the research findings for the clinical use of PIRAT Global Scales in a variety of clinical settings and for future research will be discussed.

Impact Statement

This research project generates applicable knowledge and expands the potential of professional thought and action in both, clinical and research contexts and for different populations. The findings have contributed to the understanding and assessment of the impact of maternal psychopathology and trauma, adult attachment styles, the parent's capacity for mentalization and how these influence the quality of the parent-infant relationship. Moreover, this research has contributed to the understanding of the baby's impact on the relational quality, as it rises the awareness of the subtle signs of disturbed interactions, even in interactions that do not immediately provoke anxiety in the observer but might be precursors of later social and emotional difficulties.

PIRAT Global Scales enable the user to codify his or her observations and set them within a validated assessment framework of the parent-infant relationship, observed within interactions between mother/father/caregiver and infant/toddler. A considerable strength of assessing interaction is that the results are much more available for use in therapeutic settings than in laboratory attachment assessments. The scales provide a shared language for professional multidisciplinary health teams undertaking risk assessments and requiring a framework for identifying infants at risk of developmental disturbances and delays. As PIRAT Global Scales' theoretical background is grounded in psychoanalytic thinking about the parent-infant relationship, it may be a suitable measure not only to assess the quality of the relationship but also to train health professionals from a variety of backgrounds to observe the subtleties of the emerging early parent-infant relationship. PIRAT Global Scales offer a structure to systematise thinking about the qualities of the parent-infant relationship. They also provide a language to discuss the observed relational quality and to facilitate the transfer of knowledge from infancy research and psychoanalytic theory about the early relationship into a wider professional milieu, and contribute to the process of formulating risk assessments and a need for intervention.

Therefore, these findings have implications for the field of Psychoanalysis, Psychoanalytic training, Parent-Infant Psychotherapy, as well as in Paediatrics, Infant and Adult Psychiatry, Infant and Maternal/Perinatal Mental Health, and in Public Health, Prevention and Early Intervention Programmes in general, as this measure can be used reliably by professionals from a range of professional backgrounds, such as GPs, paediatricians, health visitors and community nurses, as well as psychiatrists and psychotherapists. It aims to identify parents and infants where the primary relationship

is in difficulty when it appears in the consulting room, clinic or home environment, and can be used as a screening instrument to identify infants at risk. The current validation study has provided data about a validated observational measure for clinical use. PIRAT Global Scales offer a global, multidimensional, clinically-informative and accessible measure of the parent-infant relationship.

Finally, future research on cross-cultural differences of perinatal psychiatric disorders, attachment patterns, parenting styles, and relational risk assessment, as well as comparisons of mother-infant and father-infant interaction and of dyadic and triadic interaction will benefit from PIRAT Global Scales. Furthermore, PIRAT Global Scales could be used for outcome evaluation of early intervention, in particular parent-infant psychotherapy.

Acknowledgements

I would like to acknowledge the contribution of every mother and baby who took part in the Parent-Infant Psychotherapy Randomized Controlled Study, and who consented to being filmed during treatment at the Parent-Infant Project at the Anna Freud Centre. Without their generous contribution, none of this research would have been possible.

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This journey of learning and discovery would not have been possible without the advice, support and inspiration of several people along the way.

Firstly, I am extremely grateful for and feel immensely privileged to have been supervised by Mary Target. The immense breadth of her knowledge, her inspiring thoughts and ideas, very helpful guidance and continuous support kept me going. I would also like to thank my secondary supervisor, Carol Broughton, for her helpful advice and contribution throughout each stage of this research, in particular the endless hours of coding and discussing videotaped parent-infant interactions. In addition, I am indebted to both of my supervisors for their patience and generous support regarding my imperfect English.

There were many colleagues and collaborators who were involved in research that contributed to this thesis and I am grateful to all of them. I would especially like to thank Michelle Sled, Peter Fonagy and Tessa Baradon for generously sharing the data of the Parent-Infant RCT Study, as well as colleagues of the Parent-Infant Project for their support in the early stages of this research. I would also like to thank my fellow researcher Claus Barkmann for his methodological supervision, and my dear friends and colleagues with whom I discussed my work along the way: Inge Pretorius, Veronika Gries and Majlis Winberg Salomonsson. I am extremely grateful to my mentors at the IPA Research Training Program, in particular Bob Emde, for the opportunity to discuss this research with them, and for freely sharing their experience.

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I was fortunate to experience the world of psychoanalytic thinking about parents and babies and how early relational experiences shape the self of the baby at the Parent-Infant Project at the Anna Freud Centre. While conducting this research, I underwent a psychoanalytic training and a personal psychoanalysis. It has been a humbling and profound experience.

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Contributions

This dissertation has drawn upon data, particularly videotaped mother-infant interactions from clinical parent-infant psychotherapy cases from the Parent-Infant Project at the Anna Freud Centre and research cases from the Parent-Infant Psychotherapy RCT Study at the Anna Freud Centre. For each, my contribution to the research is detailed below:

1. Clinical sample of mothers and babies from the Parent-Infant Project at the Anna Freud Centre (Chapters 4-5)

This sample of 30 clips comprised cases from the Parent-Infant Project exhibiting various qualities of parent-infant relationships, which have been used for the refinement of and training on PIRAT, as well as the development of and training on PIRAT Global Scales.

I was jointly involved, with Dr Carol Broughton, in the coding of PIRAT and PIRAT Global Scales in order to establish a 'gold standard' coding of clips used for training and reliability testing, and in the training of the colleagues who coded the reliability set of clips used for the pilot studies on inter-rater reliability (IRR). I coordinated the reliability testing, the coding progress, data entry and IRR analysis.

2. Clinical sample of mothers and babies who dropped out from the Parent-Infant Psychotherapy RCT Study (Chapters 4-5)

This sample of 30 clips of parent-infant interactions at free play was drawn from drop-out cases from a randomized controlled trial of Parent-Infant Psychotherapy (Fonagy, Slead & Baradon, 2016) for mothers with mental health problems and their infants.

Although I was not involved in the collection or coding of PIP RCT data, I was jointly involved, with Dr Carol Broughton, in the coding of PIRAT and PIRAT Global Scales in order to establish a 'gold standard' coding, and in the training of colleagues who coded the sample of clips used for the pilot study on inter-rater reliability (IRR) of PIRAT and PIRAT Global Scales. I coordinated the reliability testing, the coding progress, data entry and analysis of the IRR codings. As a result of this collaboration, we co-authored poster presentations which have been presented at several conferences (details in Publications section below).

3. Clinical sample of mothers and babies from the Parent-Infant Psychotherapy RCT Study (Chapters 6-8)

This sample of 70 parent-infant interactions at free play was drawn from a randomized controlled trial of Parent-Infant Psychotherapy for mothers with mental health problems and their infants. Although I was not involved in the collection or coding of PIP RCT data, I was jointly involved, with Dr Carol Broughton, in the coding of PIRAT Global Scales in order to establish a 'gold standard' coding, and in the training of the colleagues who coded the sample of 40 clips used for the inter-rater reliability (IRR) research (Chapter 6). I coordinated the reliability testing, the coding progress and data entry of the IRR research coders, and the establishment of a 'gold standard' coding for sample of 70 clips used for PIRAT Global Scales validation (Chapters 7-8), as well the CARE-Index coding by an external certified coder.

Furthermore, I conducted the set up of the databases and was in charge of the analysis of the data used in this thesis.

Publications

Broughton, C. & Hommel, S. (2016). Clinical Use of the Parent-Infant Relational Assessment Tool (PIRAT). Poster presented at the bi-annual conference of the World Association of Infant Mental Health (WAIMH), 29.05. - 02.06.2016, Prague, Czech Republic.

Broughton, C. & Hommel, S. (2014). The Parent-Infant Relational Assessment Tool. Poster presented at the bi-annual conference of the World Association of Infant Mental Health (WAIMH), 14. - 18.06.2014, Edinburgh, UK.

Hommel, S. (2016). Observation of the relational quality and clinical use of the Parent-Infant Relational Assessment Tool – PIRAT Global Scales. Workshop, 'Who is the patient in Parent-Infant Psychotherapy, presented at the bi-annual conference of the World Association of Infant Mental Health (WAIMH), 29.05. - 02.06.2014, Prague, Czech Republic.

Hommel, S. (2015). Infants in Psychoanalysis - the Assessment of the Quality of the Parent-Infant Relationship in Parent-Infant Psychotherapy. Invited lecture, 49th Congress of the International Psychoanalytic Association (IPA), 22 - 25th of July 2015, Boston, MA, US.

Hommel, S., Broughton, C., & Target, M. (2016). A pilot study on inter-rater reliability of the Parent-Infant Relational Assessment - PIRAT Global Scales. Poster presented at the bi-annual conference of the World Association of Infant Mental Health (WAIMH), 29.05. - 02.06.2014, Prague, Czech Republic.

Hommel, S., Broughton, C., & Target, M. (2015). A pilot study on inter-rater reliability of the Parent-Infant Relational Assessment Tool – PIRAT Global Scales. Poster presented at the Sandler conference, 17 – 18th of July 2015, Child Study Centre, Yale Medical School, New Haven, CT, US.

Hommel, S., Broughton, C., & Target, M. (2014). A pilot study on inter-rater reliability of the Parent-Infant Relational Assessment Tool (PIRAT). Poster presented at the bi-annual conference of the World Association of Infant Mental Health (WAIMH), 14. - 18.06.2014, Edinburgh, UK.

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Overview of Samples, Clips and Coders

| Chapter | Aim of study | Manual | Clips | Coders |
|---------|--|---|---|---|
| 4 | Development of PIRAT Manual – Version 2.0 | PIRAT Manual 1.0 | 30 PIP and 30 PIP RCT Drop-outs | CB & SH |
| | Pilot Study into IRR of PIRAT Manual 2.0 | PIRAT Manual 2.0 | Reliability Set (30 clips, normative and clinical from PIP RCT) | CB & SH and 7 raters |
| | Development of PIRAT Manual – Version 3.0 | PIRAT Manual 2.0 & results, codings and feedback from from Pilot Study into IRR | Reliability Set | CB & SH |
| 5 | Pilot Study into IRR of PIRAT Global Scales Manual 1.0 | PIRAT Global Scales Manual 1.0 | Reliability Set | CB & SH and 7 new raters |
| | Development of PIRAT Global Scales Manual 2.0 | PIRAT Global Scales Manual 1.0 & results, codings and feedback from from Pilot Study into IRR | Reliability Set | CB & SH |
| | Pilot Study into IRR of PIRAT Global Scales Manual 2.0 | PIRAT Global Scales Manual 2.0 | Reliability Set | CB & SH and 8 new raters |
| 6 | Inter-rater Reliability | PIRAT Global Scales Manual 2.0 | 40 clips from PIP RCT at Baseline | CB & SH and same 8 raters as in Chapter 5 |
| 7 | Internal Consistency | PIRAT Global Scales Manual 2.0 | 70 clips from PIP RCT at Baseline | CB & SH |
| 8 | Construct Validity | PIRAT Global Scales Manual 2.0 | Same 70 clips from PIP RCT at Baseline | CB & SH |

Glossary and Abbreviations

| Term / Abbreviation | Explanation |
|-----------------------------|--|
| AFC | Anna Freud Centre, now the Anna Freud National Centre for Children and Families, or AFNCCF |
| α | Cronbach's Alpha |
| CB | Dr Carol Broughton, D.Psych. |
| CAF | Clinical Assessment Form, the preceding scale of PIRAT |
| CARE-Index | Child Adult Relationship Index |
| CIB | Coding Interactive Behaviour |
| Coding | = rating |
| EAS | Emotional Availability Scale |
| 'gold standard' | Consensus rating between two reliable expert raters |
| 'gold standard' coders | CB and SH |
| GHQ | General Health Questionnaire |
| Infant-Parent Global Rating | PIRAT Global Scales' rating of the global infant-parent relational quality |
| Infant-Parent Scale | Rating scale comprised of 12 infant-parent subscales |
| infant-parent subscales | subscales describing various infant-parent relational qualities |
| item level | = subscale level |
| ICC | Intraclass Correlation Coefficient |
| IRR | Inter-rater reliability |
| κ | Cohen's Kappa |
| κ_w | Kappa weighted |

| | |
|--|--|
| Likert Scale | Scale comprised of a summation of subscales (or items), with specific statistical features |
| MT | Prof Mary Target, Ph.D. |
| PIRAT | Parent-Infant Relational Assessment Tool |
| PIRAT Global Scales | Parent-Infant Relational Assessment Tool Global Scales |
| Parent-Infant Scale | Rating scale comprised of 11 parent-infant subscales |
| parent-infant subscales | subscales describing various infant-parent relational qualities |
| Parent-Infant Global Rating | PIRAT Global Scales' rating of the global infant-parent relational quality |
| PDI | Parent Development Interview |
| PIRAT/PIRAT Global Scales Trainer | Dr Carol Broughton & Susanne Hommel |
| PIRAT Global Scales Reliability Training | Standardised reliability training and testing protocol |
| p | Level of significance |
| PIP | Parent-Infant Project at the AFC |
| PIP RCT | Parent-Infant Psychotherapy RCT Study |
| PCC | Pearson's product-moment correlation coefficient |
| Rating | = coding |
| RCT | Randomized Controlled Trial |
| SD | standard deviation |
| SH | Susanne Hommel, the present author |
| Subscales | infant-parent 1-12 and parent-infant 1-11 |
| Subscale level | = item level |
| RF on PDI | Reflective functioning rated on the PDI |
| PDI | Parent Development Interview |
| PIP | Parent-Infant Project at the Anna Freud Centre |

PIP RCT

Parent-Infant Psychotherapy Randomized
Controlled Trial

PSI

Parenting Stress Index

UCL

University College London

1. The Parent-Infant Relationship from a Psychoanalytic Point of View

1.1. Introduction

This thesis gives an overview of the development of the Parent-Infant Relational Assessment Tool (PIRAT) and PIRAT Global Scales, and research into their reliability and validity.

The Parent-Infant Relational Assessment Tool (PIRAT) – Version 1.0 (Broughton & the Parent-Infant Project, 2003) was developed within the Parent-Infant Project (PIP) at the Anna Freud Centre (now the Anna Freud National Centre for Children and Families, or AFNCCF) in London as a risk assessment tool for use by health professionals in the field of parent-infant psychotherapy, infant and perinatal mental health and infant development. It aims to identify parents and infants where the primary relationship is in difficulties as it appears in the consulting room, clinic or home environment.

PIRAT is an observational measure that provides clear and concise descriptors for significant infant and parent behaviours in the emerging parent-infant relationship. It enables health professionals to rate observed dyadic relational qualities, rather than relying on parent's report about the perceived relationship, such as clinical interviews or questionnaires, and therefore reduces the bias in parental perceptions of infant behaviours and functioning (Broughton, 2014; Salomonsson & Sled, 2010). The clinical focus sets the parameters for developing a measure to assess the quality of the parent-infant relationship in a parent-infant psychotherapy setting, with a view to its implementation across other clinical workplace settings by healthcare professionals working with infants and their parents.

PIRAT was further refined and reliability tested (Broughton, Hommel & the Parent-Infant Project, 2012; 2014), and PIRAT Global Scales (Broughton, Hommel & the Parent-Infant Project, 2014; 2016) were developed and reliability and validity tested as part of the research described in this thesis.

This thesis consists of nine chapters, the first chapter provides an overview of psychoanalytic thinking about the infant and the parent-infant relationship. This is followed by a measures review in Chapter 2 before introducing PIRAT in detail in Chapter 3, which leads to the development of the Parent-Infant Relational Assessment Tool Global Scales (PIRAT Global Scales) and preliminary research on its inter-rater reliability in Chapters 4 and 5. Research on the reliability and the validity of PIRAT Global Scales will be outlined in Chapters 6, 7 and 8, which will in turn be summarised and concluded within the discussion and directions for future research in Chapter 9.

This first chapter seeks to give an overview of psychoanalytic thinking about the infant and the parent-infant relationship. Based on the theory of the infant-parent relationship, it offers an overview of various conceptualisations of what is observable and has been observed so far. This seems to be an important differentiation, as theories on what we observe within the parent-infant relationship can be used in order to conceptualise measurement, so that measures are derived from theory, or measurement can provide us with new findings, which lead to new theories and build up our knowledge.

For example, the renowned Still-Face Paradigm by Tronick (Tronick, Als, Adamson, Wise, & Brazelton, 1978) served as a theoretical backdrop for understanding the infant's ability to actively initiate, take part in, and maintain an ongoing interaction with his mother. Similarly, the Strange Situation Procedure by Ainsworth and colleagues (SSP; Ainsworth, Blehar, Waters, & Wall, 1978) sought to observe infant reactions to separation but uncovered additional theoretical material, e.g. that of infantile affect regulation, defence mechanisms, infantile disorganization, and parental unresolved trauma and dissociation. Even when the human mind tries to adhere consistency and seeks to categorize inconsistencies, both examples show that recognising inconsistencies in the infant and parent behaviours which did not fit into any of the defined categories created further theoretical understanding. Moreover, the Still-Face Paradigm and the Strange Situation Procedure stimulated significant research on the impact of the baby on the emerging parent-infant relationship, affect regulation, disorganisation and dissociation, atypical maternal or parental behaviours, maternal postnatal depression and unresolved trauma, leading to an impressive body of theoretical concepts regarding the psychoanalytic understanding of the parent-infant relationship.

Therefore, chapters 1 and 2 present examples of theories derived from measurements as well as measurements, such as the Parent-Infant Relational Assessment Tool (PIRAT) Global Scales, developed from theories, their conceptualisation and clinical experience.

As this is the introduction to the validation of an observational measure designed to assess the dyadic parent-infant relationship from 0 – 24 months of age, I will focus on the dyadic parent-infant/toddler relationship up to the age of two years. A dyadic relationship is defined here as a relationship between two persons - the parent and the infant, in particular the mother and infant. I will therefore leave the impressive body of theory and research on the specifics of fathers and infants, mother-father-infant relationships, same sex parents and their relationship to their infant, triadic interaction and triadic relationships, to the discussion and directions for future research at the end of this thesis. In order to prevent confusion, I will generally refer to the infant or baby as

'he' and the parent as 'she', using 'parent' for either a mother or a father, and 'mother' when describing particularly maternal functions in relation to the infant.

As much as this introduction would benefit from a chronological outline of the development of psychoanalytic theories on the infant and parent-infant relationship in a timeline such as the exemplary 'One Hundred Years of Psychoanalysis, A Timeline: 1900-2000' by Elisabeth Young-Bruehl and Christine Dunbar (2009) it would not allow sufficient space to reflect on the complexity of psychoanalytic thinking on the development of the self in the context of the earliest relationship.

I will therefore follow the progression of psychoanalytic thinking and theories, which may be chronological at times, and organise this into four central headings, such as the 'clinical infant' and the 'relational turn' in psychoanalysis, the 'empirical infant' in infancy research, as well as the more recent findings from neuropsychology and neuroscience. I will outline the theoretical thinking of psychoanalysts as well as paediatricians, social workers, neurologists and developmental psychologists interested in psychoanalysis, as their work has been significant in furthering our understanding of the infant's 'construction of the subjective self' (Fonagy, Gergely, & Target, 2007) in the context of early relationships and their disturbances.

1.2. The 'Clinical Infant' and Attachment Theory

Psychoanalytic thinking about the infant and the emerging early relationship focuses on the 'clinical infant' who emerges either through 'clinical research in psychoanalysis itself' or "infant observation as a source of new knowledge, as a method of research which follows heuristic requirements of its chosen object of study, unconscious mental processes" (Rustin, 2006, p. 35). Psychoanalysts use their knowledge of infantile experiences, theoretical models and transference and countertransference in the 'here and now' of the psychoanalytic treatment of children and adults in order to cultivate a deeper understanding of early experience in infancy and further develop psychoanalytic theory around the 'psychoanalytic baby' in the early parent-infant relationship. Through infant observation training, psychoanalysts study the process of the infant's individuation from its earliest beginnings observing the quality of the interaction and emerging relationship between mother and baby, as well as the baby himself (Bick, 1964). Other than the empirical observation in infancy research, the 'psychoanalytic baby' in infant observation emerges through observation that lacks rigorous standardized measures and coding procedures, using the unconscious of the observer to feel and phantasise about the infant's experience, create theoretical ideas and link them to psychoanalytic theories.

The work of many psychoanalysts from Sigmund Freud himself (1894, 1920, 1926), to René Spitz (1945, 1961, 1965), Margret Mahler (1974, 1975), Anni Bergmann (1999), Anna Freud (1937, 1941, 1965), Dorothy Burlingham (1941, 1972), Melanie Klein (1958, 1959), Ronald Fairbairn (1952), Esther Bick (1964), Wilfred Bion (1962a, 1970) and Donald Winnicott (1945, 1957, 1958, 1971) established a framework for our understanding of how the infant's self emerges in the context of the early mother-infant relationship and has been influential to our understanding of the regulation of affect, emotion and mental states in the primary relationship. Even when most of their theoretical thinking corresponds with later findings from infancy research, there are specific examples that do not support their theoretical notions, such as Sigmund Freud's (1920/2001) notion of the infant as a 'tabula rasa' that is symbolically filled by mother's milk, as well as Margret Mahler's (1952, 1968; Mahler, Pine, & Bergmann, 1975) assertion of an 'autistic phase' which has been disproven by Daniel Stern and others, given what we know about the numerous capacities at birth that enable the infant to engage the caregiver and show competencies socially more generally.

The outline of theories on the 'psychoanalytic baby' fades out the vast knowledge from over 20 years of empirical infancy research and more recent neuroscientific research in

order to focus on the non-conscious and unconscious dynamics of the early parent-infant relationship and how the infant's 'sense of self' emerges.

A review of theories and thinking about the 'psychoanalytic baby' is followed by a theoretical overview of the attachment relationship, leading to the 'relational turn in psychoanalysis' and the theoretical concept of 'object relations' which is basic to empirical infancy research and to our understanding of the parent-infant relationship today.

1.2.1. The Emerging Self of the Infant within the Context of the Early Relationship

In his early writings on the model of the psyche, Sigmund Freud (1894/2001) introduced the concept of a 'contact barrier' to protect the mental apparatus and filter excitations from outside which could overwhelm the inner capacities (Freud, 1920/2001). After he revised his initial idea of early traumatic experiences being solely related to infantile sexuality (Freud, 1894/2001), he developed his theory on the origin of anxiety as stemming from the infant's innate 'helplessness' and need for care ("Hilflosigkeit"; Freud, 1926/2001). His consideration of the psychodynamics of anxiety led him to question whether the loss of maternal love was central for the development of anxiety. The much cited vignette of Freud's observation of his toddler grandchild Ernst playing 'fort-da' with a cotton reel to master the anxieties created by the coming and going of his mother (Freud, 1919 footnote to Freud, 1900, p. 461) became psychoanalytic history as part of his major revision of drive theory in 'Beyond the Pleasure Principle' (Freud, 1920/2001).

The mastery of anxiety, fear and loss seemed key to the development of psychoanalytic thinking on the infant and the emerging self. The establishment of inner representations of early experiences with mother and father, the impact of 'losing them' at times to re-connect afterwards would be fundamental not only to the parent-infant relationship but, critically, to the baby's experience of the relationship.

Anna Freud concentrated her attention "on the first year of life and the earliest interactions between infants and their mothers" (A. Freud, 1953, p. 304). Following both her father and Ferenczi's thinking on mothers and babies and the concept of telepathy or thought transference, she became interested in the way mothers and their babies attuned to one another through non-verbal communication. She undertook systematic longitudinal mother-infant observations and presented seminars on 'child

observation' in the 1920s. These seminars were attended by several analysts who were latterly credited as being the first psychoanalysts to conduct systematic longitudinal observations of infants, young children and their parents, or to implement infant observation in psychoanalytic training, such as Charlotte Buehler, Lieselotte Frankl, Ilse Hellmann, Esther Bick and René Spitz (Hellmann, 1990; Ludwig-Koerner, 2012; Pretorius, 2011, Young-Bruehl, 2008). Despite their shared origins, these pioneers of systematic longitudinal observation differed significantly in their method of observing (Freud, 1966 [1970]; Ludwig-Koerner, 2015, 2016). Anna Freud's interest in direct observation of pre-oedipal children was to complement and confirm psychoanalytic insight and develop a theory of child development and was realised with the opening of the Jackson Nursery in Vienna in 1937, "Our wish was to gather direct (as opposed to reconstructed) information about the second year of life, which we deemed all important for the child's essential advance from primary to secondary process functioning; for the establishment of feeding and sleeping habits; for acquiring the rudiments of superego development and impulse control; for the establishment of object ties to peers" (Freud, 1978, p. 731).

In the Jackson Nursery and later in the Hampstead War Nurseries in London, Anna Freud and Dorothy Burlingham focused their observations on early mother-infant relations almost from birth. They would observe infants in contact with their mothers or those being deprived of maternal care, those being breastfed or bottle-fed, being separated or reunited with their parents, the contact with mother substitutes and their developing relationships with peers (Freud, 1951). All staff recorded detailed observations that were integrated into the overall theoretical framework, which was continually modified by information gained from new observations. This process highlighted the importance of children's earliest relationships for their later development (Zaphiriou Woods & Pretorius, 2016).

Observing children was part of Anna Freud's 'double approach' which "integrated direct child observation with the psychoanalytic reconstruction of childhood experience from the psychoanalyses of children and adults" (Zaphiriou Woods & Pretorius, 2016). This enabled the detailed study of unfolding developmental processes and the construction of a theory of normative as well as pathological child development. Infant observation should increase the psychoanalytic student's understanding of the infant's nonverbal behaviour and his play, as well as the behaviour of the young child who neither speaks nor plays. It also gives each student a unique opportunity to observe the development of an infant more or less from birth, in his home setting and in relation to his immediate family, in particular mother and/or father, finding for himself how these dyadic relations emerge and develop. "In order to conceive vividly the infantile experience of their child patients, so that when, for example, they started the treatment

of a two-and-a-half-years old child they would get the feel of the baby that he was and from which he is not so far removed” (Bick, 1964, p. 558).

Through this observation Anna Freud and Dorothy Burlingham established, “what now would be called an ‘object relations’ perspective on how people identify with the objects they lose” (Young-Bruehl, 2004, p. 189). Interestingly, given the heated controversies between them at the time, Anna Freud refers to Melanie Klein’s concept of ‘projective identification’ when describing the deep feelings in early childhood of loss, being lost, deserted or abandoned by a parent and how these feelings resurface displaced in the context of actual loss of an object later in life. Much of Anna Freud’s and Dorothy Burlingham’s early writings conceptualize the affective attunement of pre-verbal infants and toddlers to their mothers, “The mother’s unconscious is not less vital for the child than what happens in her consciousness...” and “young children have a greater capacity for observation than had been thought previously; that they observe the direct expression of affect as well as the efforts to deny emotion; that they are especially receptive to those expressions of repressed impulses on which the mother’s character is based” (Burlingham, 1972, cited in: Young-Bruehl, 2004, p. 191). Their theory on how this attunement takes place develops from the transference to empathy between baby and mother, with a high capacity of empathy in the infant itself. They state that the “infant’s need for emotional closeness to other human beings” cannot be met with “impersonal and professional hygiene, care and supervision” (Infants without families, A. Freud, 1941, cited in: Young-Bruehl, 2004, pp. 192-193). In thinking about the infectious quality of anxiety between parents and babies, “The child’s fears are to a large extent dependent on their parent’s anxiety” (A. Freud, 1941, p. 12). Their observation and writings contain an impressive and expansive range of thoughts, culminating in theoretical concepts depicting psychoanalytic research at its best.

Even though Anna Freud’s work may seem less present in contemporary psychoanalytic thinking, for the following generation of psychoanalytic successors such as Winnicott, Kohut and Lacan, her work was considered progressive. The Hampstead Child Therapy Course and Clinic, founded by Anna Freud and Kate Friedlander in the beginning of the 1950s, became the most important centre of psychoanalytic research for decades. The Hampstead Clinic reflected Anna Freud’s two principles of studying children: to combine research with service, and to complement psychoanalytic treatment with the study of normal development (Pretorius, 2011). In addition, she trained her staff to become observers, keeping detailed records of the developing mother-infant relationship. This method of recording observations would develop into an important research tool in psychoanalytic child observation (Hellman, 1983). The observational data from the Hampstead War Nurseries would not only “swell the body of existing analytic knowledge” (A. Freud, 1951, p. 145) but would be fundamental to

our understanding of psychoanalytic thinking on the mother-infant dyad, finding its way into a wide range of professional fields, from paediatrics and psychosomatic medicine to adolescent and adult psychiatry. Anna Freud's war-time work is now being rediscovered in relation to the current global refugee crisis and her theoretical thinking (1981) about developmental lines from infancy to adulthood contains an impressive summary of her work with which to understand developmental psychopathology, and the impact on infant and caregiver contributions to the interactions observed.

The psychological concept of the 'self' dates back to James's (1890, 1892) work differentiating between two aspects of the self, the 'I' (the self as a subject) and 'Me' (the self as an object). In his understanding the 'I' is actively creating the 'Me', the mental representation of the self. Cooley (1902, 1964) describes this mental process in early childhood as the baby deriving its own mental state from the mental state of the other in order to create meaning of its inner state and emotional experience. Understanding behaviour in terms of mental states is measured as 'reflective function' (Fonagy, Steele, Moran, Steele, & Higgitt, 1991a, Fonagy & Target, 1997). "This ability arguably underlies the capacities for affect regulation, impulse control, self-monitoring, and the experience of self-agency, the building blocks of the organization of the self." (Fonagy & Target, 1997, p. 680). The unconscious and automatic mental process, called reflective function, enables the child to 'read' people's minds (Baron-Cohen, Tager-Flusberg, & Cohen, 1993), to create meaning and to predict other people's behaviours and to respond accordingly in order to interact with, and relate to, the world. The differentiation of self and other is a crucial theoretical concept, leading to a more recent understanding of the dyadic relational aspects constituting the self of the infant. Sigmund Freud postulated a 'protective shield' differentiating between the inside and the outside and the body and the mind in order to prevent overwhelming drive excitations and to secure mental functioning. In this model the mother is understood to be the 'protective shield'. In his understanding, the unconscious cannot yet differentiate between inner and outer reality whereas the preconscious is defined as the realm in which unconscious representations of objects and feelings are met by conscious representations of words. The 'protective shield' allows a link to be made between words and feelings. The absence of it therefore results in a difficulty connecting words with feelings and leads to "operational thinking" ("pensée opératoire", Marty & de M'Uzan, 1978, p. 535), a diminished capacity for identification with an object. Freud's model of maternal functioning is rooted within the concept of an object and the process of symbolization, and provides an approach to psychopathology in infancy in which the 'protective shield' is either overwhelmed by excitations or its deficiency or absence generates severe functional disorders and infant depression basic to psychosomatic

disorders (Kreisler, 1977).

Freud's notion of a 'protective shield' seems similar to several concepts of his predecessors, such as the 'psychic skin' (Bick, 1968), 'an envelope after birth to maintain homeostasis' (Brazelton, 2006), the 'Skin-Ego' (Anzieu, 1989), Bion's (1962, 1970) 'container-contained' theory, Winnicott's 'container' (1958, 2005) and Stern's 'pre-narrative envelope' (1993, 1995) in which 'the mother's containing functions' (Bick, 1968, 1986) are introjected in order to either shield the infantile mental functioning from being overwhelmed, and protect it from psychic conflict, or help regulate affects. Within this conceptual understanding, providing protection for the baby's psyche in the midst of ego demands and sexual drives is central to maintaining a 'continuity of being' (Winnicott, 1953). Stern's 'pre-narrative envelope' (1993, 1995) outlines the infant's interactions with his mother and his experiences of 'being with one another', in turn leading to an 'internal working model' that constitutes the internalisation of the attachment relationship.

French psychoanalysts postulated the concept of the 'psychic envelope' (Houzel, 1987) containing the inner world and reflecting the not yet integrated affects and experiences. The container, envelope or contact barrier is developed within the early maternal caregiving context (Mellier, 2014). Initially they are sensory, related to proximal senses such as touch, smell, thermal perception and distal senses, such as sight, sound and in particular the maternal voice (Anzieu, Haag, & Tisseron, 1993; Spitz, 1965). Several psychoanalysts such as Spitz (1965), Dolto (1984), Anzieu (1993) and Palacio-Espasa (2007) considered sensory and bodily aspects of the parent-infant interaction, such as the infant's body image, parental bodily interactions and specific projections into the infant e.g. through narcissistic parental projections (Palacio-Espasa, 2007). Their observational studies of infancy illustrate how the concept of a 'psychic envelope' is related to the development of the infant's body image.

More recent psychoanalytic concepts link the brain and the body, such as 'embodiment' (Fonagy & Target, 2007) and 'parental embodied mentalizing' (PEM; Shai & Belsky, 2011), and focus not only on the verbal or pre-verbal expressions but also on bodily movements (kinaesthetics) during the parent-infant interaction. 'Embodiment' describes the way in which the mind is rooted in the body, as well as how the body and its developmental experiences become symbolised (Fonagy & Target, 2007; Klin & Jones, 2007). 'Parental embodied mentalizing' is based on the theoretical construct of mentalizing, the capacity to understand behaviours and underlying mental states beyond observable actions (Fonagy et al., 2007; Fonagy, Gergely, Jurist, & Target, 2002). The child's capacity to develop a mentalizing stance is dependent on a parental mentalizing capacity to "create a world for the child in which he may experience himself as a feeling, wanting, thinking being" (Target & Fonagy,

1996, p. 146). This is how a child understands his own actions to be motivated by mental states, wishes and desires. “The mother’s observations of the moment to moment changes in the child’s mental state, and her representation of these first in gesture and action, and later in words and play” (Slade, 2005, p. 271) allows the infant to experience maternal mentalizing capacities, representing “the links between affect, behavior, the body, and self-experience” (Slade, 2005, p. 271). Parental mentalizing capacities are reflected in “parents’ use of the very communicative means that infants employ: the nonverbal kinaesthetic mode” (Shai & Belsky, 2011, p. 175). ‘Parental embodied mentalizing’ claims to be “intrinsically dyadic” (Shai & Belsky, 2011, p. 176) as the mutual influence of both the parent’s and the infant’s actions regulate those of the other (Fogel & Branco, 1997; Gianino & Tronick, 1988). The dyad is the unit of observation and the parent’s ability to repair dyadic miscoordination (Tronick, 1989) is central in establishing a secure attachment (Tronick & Cohn, 1989).

The theoretical concepts mentioned above seem crucial in order to understand the infant’s developing sense of self within the context of the early parent-infant relationship.

They provide an idea of how the mastery of anxiety seems key to the development of psychoanalytic thinking on the infant and the emerging self. And describe the establishment of inner representations of early experiences with mother and father, the impact of ‘losing them’ at times in order to re-connect afterwards. Anna Freud’s and Dorothy Burlingham’s attention to the first year of life and the earliest interactions between infants and their mothers offers a new perspective on the dyadic relational aspects constituting the self of the infant, as well as how infant and caregiver contribute to the interactions observed. Their theoretical thinking on the creation of meaning of the infant’s inner state and emotional experience describes how the infant starts recognizing its own emotional experience through transference within the interaction with an emotionally attuned parent. Similar to what Gergely & Watson (1996) later described as parental ‘marked mirroring’ of the infant’s affect, transference enables the infant to differentiate its own affect from the parent’s. During this interactional process the parent-infant attunement develops from transference to empathy between baby and mother, with a high capacity of empathy in the infant itself.

The following paragraph describes the psychoanalytic theories on the differentiation of inner and outer world contributing to the development of the capacity of affect regulation. It shows how psychoanalytic thinking on the differentiation of the infant’s inner and outer world relates to the more recent acknowledgement of the importance of bodily aspects within the parent-infant interaction, particularly embodied relational representations of gestures and actions experienced in the early parent-infant

relationship and their meaning regarding the development of the self.

This is not only basic to the formation of an attachment relationship in the context of contact and care provided by the caregiver but also, as shown below, it offers a valuable framework for the systematic observation of the parent-infant relationship through standardized measures coding the quality of the parent-infant relationship.

1.2.2. The Attachment Relationship

The theory of attachment (Bowlby, 1958, 1969, 1973; Ainsworth et al., 1978) is probably the most comprehensive and well-known theoretical framework for understanding the infant's earliest experiences with their caregivers, underlining how these experiences influence later development across the lifespan and across generations. Attachment is an adaptation and as human cultures are primarily adaptive at group level, such as within the family (Wilson, 1976), attachment forms part of a social signalling system directing the infant to prioritise particular patterns of behaviours needed for social communication. The ostensive cues of a baby's and parent's non-verbal interaction, such as eye contact, contingent reactivity and the special tone and modulation of the parental voice known as 'motherese', are basic to their social communication. Bowlby's (1969) notion that infants depend on their parents for growth and survival during the first years of life was fundamental to attachment theory. This plays a central role, not only in understanding how the infant's mind comes into being within the context of a significant parent-infant relationship and environment (Bowlby, 1973), but for the impressive field of attachment research focusing on the impact of the attachment relationship for mental health across the lifespan (Bowlby, 1958; Bretherton & Munholland, 2008). Bowlby described the reciprocal caregiving behavioural system as complementing an inner system within the child, organising behaviours to provide their protection, care and comfort (Bowlby, 1969; George & Solomon, 2008; Solomon & George, 2006).

According to attachment theory, infants will form an attachment to their caregiver when they receive regular contact and care. Continuous experiences of a specific quality of caregiving establish the child's level of confidence in the availability of the caregiver and therefore determine the organisation of the infant's attachment system.

The impact of mastery of fear and threat in the development and maintenance of attachment relationships has been largely missing in psychoanalytic thinking on attachment, despite Bowlby's (1969) emphasis on fear and the search for safety (Slade et al., 2014). His theoretical considerations alert the clinician to how the infant or child

is compelled to seek safety when in a state of fearful arousal, and supports understanding the long-term sequelae of adaptations that were crucial to survive in infancy (Slade et al, 2014). Attachment theory therefore became, and still is, fundamental to our understanding of the importance and impact of the early relationship in developing the infant's sense of his inner world, his sense of self, the social and environmental world around him and the way in which he relates to the world in interpersonal situations (Fonagy, 2004; Fonagy & Target, 1997). Furthermore, the quality of the attachment relationship which parents experienced with their caregivers could determine the quality of the parenting they would provide to their own children (Ammaniti, Speranza, & Candelori, 1996; Bretherton, 1990; Steele & Steele, 1994). In addition, parental attachment patterns, such as pre-occupied and fearful attachment patterns, can predict psychopathology, such as Borderline Personality Disorder.

The school of attachment theorists focused primarily on empirical research to understand the development of infant-parent attachment (Ainsworth, 1973) and developed observational measures, e.g. 'System for rating maternal-care behaviour' (Ainsworth, 1976), and experimental measures, e.g. 'The Strange Situation' (Ainsworth et al., 1978, Main & Solomon, 1986, 1990), to identify and classify the differences in relationship patterns between infants and parents.

1.2.2.1. Measuring Attachment

The Strange Situation Procedure (SSP; Ainsworth et al., 1978) has become the gold standard measure with which to assess the organisation of the infant's attachment to their caregiver. The procedure includes a series of separations and reunions between the infant and caregiver, and at times the presence of an unknown adult, the 'stranger'. These separations are designed to induce mild levels of fear in the infant, in order to activate the infant's attachment system. Trained observers study the infant's behaviour during these separations and use an assessment protocol to classify the infant's attachment patterns.

Three patterns of attachment that infants exhibit towards their caregivers were initially observed and described (Ainsworth et al., 1978). The first category, termed secure, is characterised by protesting at separation, followed by proximity-seeking and a reduction of negative affect upon reunion with the caregiver. Secure children play freely and engage with the stranger when their caregiver is in the room, but show distress in the absence of their caregiver. Upon the caregiver's return, they seek comfort, are easily and quickly soothed and are soon able to resume exploration and play.

Insecure-avoidant infants typically show no signs of distress during separation and do not seek proximity to the caregiver following reunion. Their overall level of play and exploration is relatively low throughout the assessment. Insecure-ambivalent infants are distressed when the caregiver leaves the room but upon reunion they demonstrate ambivalence, showing anger and a reluctance to warm to the caregiver and return to play.

Subsequently, when reviewing a large number of cases assessed with the SSP, Main and Solomon (Main & Solomon, 1986, 1990) noted a group of infants whose behaviour did not seem to fall into any of the originally identified behavioural categories. This led them to define a fourth category, identified as disorganised attachment. These infants display a perplexing array of often very contradictory and inexplicable behaviours such as proximity seeking followed by avoidance or freezing; avoidance coupled with expressions of strong distress; undirected, misdirected, incomplete or interrupted movements or expressions; asymmetrical movements; mistimed movements; anomalous postures; freezing; stilling; and slowed movement (Main & Solomon, 1986, 1990).

A modification of the SSP and a number of projective measures have been developed to assess older children's attachment representations (Bretherton, Ridgeway, & Cassidy, 1990; Cassidy, 1988; Cassidy & Marvin, 1992; George & Solomon, 1990/1996/2000; Green, 2000; Hodges, 1992; Hodges, Hillman, & Steele, 2007; Kaplan, 1987; Slough & Greenberg, 1990). These methods are based on the attachment prototypes described above. Although the attachment-related behaviours will change over time during development from infancy to childhood, and notwithstanding the individual's attachment style, the goal of attachment behaviours always remains the same, the provision of protection, care, and comfort on the part of the caregiver and the elicitation of these behaviours from the attachment figure with the goal of achieving a sense of safety on the part of the child (George & Solomon, 2008).

1.2.2.2. *Internal Working Models of Attachment*

Internal working models of attachment can be thought of as schematic representations of interpersonal relationship expectations. The focus here is on dyadic internal working models, not triadic yet. If attachment in early infancy has an impact on later social, emotional and interpersonal functioning, it is likely that the mediation is via relationship expectations. Internal working models of attachment are thought to account for ongoing attachment behaviours throughout development and for the bearing that early attachment organisation appears to have on adult functioning. So, how do they

develop? The evolutionary purpose of the attachment relationship is far more than to merely secure protection for vulnerable infants. Bowlby (1973) argued that the early attachment relationship provides the infant with a template for subsequent interpersonal relationships. The mental representations (beliefs, expectations, thoughts, memories and emotions) that individuals form of themselves and others are defined as 'internal working models'. They are developed during infancy and are shaped by caregiver responses to the infant's behaviours. The internal working models impact on the individual's perceptions of events and behaviours in interpersonal interactions. They enable the individual to understand and predict social encounters. Although the early experiences of an infant with their caregiver form the original basis for these mental representations, they are flexible and can change in response to new experiences; in fact, an individual's internal working models will continue to develop into adulthood and across the lifespan. Internal working models can also be thought of as schematic representations of interpersonal relationship expectations. They play an important part in determining an individual's understanding of, and behaviour in, other close relationships with peers, romantic partners and their own children (Bretherton & Munholland, 2008).

To conclude, internal working models of attachment are thought to account for the continuity in attachment behaviours throughout development and for the influence that early attachment organisation appears to have on adult functioning.

1.2.2.3. The Impact of Attachment on Psychological Well-being Across the Lifespan

According to attachment theorists, the relationship between an infant and their caregiver plays a critical role in facilitating the infant's early psychological, social, emotional and personality development. The relational quality of this early relationship will continue to have a significant influence on the development of the infant, the toddler, their subsequent stages of childhood and across their lifespan. An impressive body of research has evidenced the stability in the organisation of attachment in an individual from infancy through to adulthood (Main, Hesse, & Kaplan, 2005; Sroufe, 2005). The attachment relationship also provides a medium for the transmission of essential skills, cultural knowledge and values from one generation to the next (Ainsworth, Bell, & Stayton, 1974; Bowlby, 1969; Gergely, 2002; Greenberg, 1999; Waters, Crowell, Elliott, Corcoran, & Treboux, 2002).

Infants who have reliable and responsive caregivers are more likely to develop secure working models of their relationship with them (De Wolff & van IJzendoorn, 1997;

Sroufe, 1996; Sroufe, Carlson, Levy, & Egeland, 1999; Carlson, 1998; Van IJzendoorn, 1995). Children in secure attachment relationships have been found to demonstrate superior emotional self-regulation than those with insecure attachment relationships (Thompson & Meyer, 2007). Secure attachment in infancy has been consistently associated with positive psychological and behavioural outcomes in later years and has also been shown to be a protective factor against later psychopathology (Belsky & Fearon, 2002; Greenberg, 1999). Finally, in a series of studies the following positive outcomes have been found to be consistently associated with secure infant attachment: more positive social relationships, more positive self-concepts, enhanced emotional understanding and social cognition, conscience development and, possibly, even improved memory (see review by Thompson, 2008). The 'Minnesota Study of Risk & Adaptation from Birth to Adulthood' (Bosquet & Egeland, 2006; Sroufe, 2005; Sroufe, Egeland, Carlson, & Collins, 2005; Warren, Huston, Egeland, & Sroufe, 1997) followed children and their families from infancy up to the age of 28 years. The study demonstrated that early secure attachment is associated with emotional health, more positive affect, self-esteem, sense of agency, self-confidence, ego resiliency and social competence in childhood and adolescence. Furthermore, infants with resistant attachment patterns were significantly more likely to be diagnosed with anxiety disorders as adolescents, compared to infants with secure or avoidant attachments even when controlling for differences in temperament (Bosquet & Egeland, 2006; Sroufe, 2005; Sroufe et al., 2005; Warren et al., 1997).

Insecure infant attachment has been shown to be one risk factor for the development of behavioural problems or psychiatric disturbances (Sroufe, 2005), even though many individuals with histories of insecure attachment do not go on to develop serious disturbances later in life. However, when compared to infants with other attachment classifications, several studies reported insecure-avoidant infants as being the most vulnerable to developing behavioural problems and impairments in social competence when exposed to negative contextual and environmental influences (Belsky & Fearon, 2002).

Disorganized attachment in infants has most certainly generated the greatest clinical interest of the attachment styles. Disorganized attachment, characterised by bizarre infant behaviour during reunions with the caregiver and controlling and sometimes pseudo-parenting types of behaviour during middle childhood, is understood to be the result of a child's experiences of seeking comfort and reassurance from the very parent responsible for causing the fear that activated the attachment system in the first place (Hesse & Main, 2000). Long-term outcomes have identified this group as most at risk and disorganized attachment as being predictive of later psychopathology. Carlson

(1998) found these children at risk of behavioural problems, internalising problems, dissociation and general psychopathology throughout their development up to the age of 19 years. Disorganized attachment in infants is associated with an elevated risk for later psychopathology, such as externalising behaviour problems and dissociative symptoms (Carlson, 1998; Lyons-Ruth, Easterbrooks, & Cibelli, 1997; for a meta-analysis see Van IJzendoorn, Schuengel, & Bakermans-Kranenburg, 1999). Other longitudinal research confirmed a significant correlation between disorganized attachment and later psychopathology relative to non-disorganised attachments (Dutra, Bureau, Holmes, Lyubchik, & Lyons-Ruth, 2009; Dutra & Lyons-Ruth, 2005; Kobak, Cassidy, Lyons-Ruth, & Ziv, 2006; Lyons-Ruth, Dutra, Schuder, & Bianchi, 2006; MacDonald et al., 2008; Ogawa, Sroufe, Weinfield, Carlson, & Egeland, 1997; Sroufe, 2005; Sroufe et al., 2005).

Bowlby's original definition of the attachment relationship was developed in an era of behaviourism. Therefore, the emphasis on the Strange Situation Procedure and secure base behaviours (Ainsworth et al., 1978; Main & Solomon, 1986, 1990) led to a dominance of cognition. The dyadic nature of the attachment relationship was divided and research either focused on the detailed description of the infant's or toddler's attachment pattern or the parental attachment narratives, reflective capacities and the adult or parental attachment representations. Over the past decades, attachment theory has undergone an expansion of both its original scientific foundations as well as its applications to clinical work and psychotherapy. In general terms, the large volume of attachment related research has validated and found an empirical footing within many of the earlier psychoanalytic insights into the complexity and emotional intensity of relationships between babies and their caregivers. It has further added new dimensions to what had earlier been learned by clinical and interpretative methods. These findings demonstrate the significance of the early assessment of risks and resilience in the emerging parent-infant relationship in order to prevent the development of a derailed attachment relationship.

1.3. The 'Relational Turn': Dyadic Regulation of Affect and the Impact on the Development of the Infant-Parent Attachment Relationship

The shift from inner processes towards relational processes in psychoanalysis was influenced by infancy research (Mitchell, 1993, 1996; Beebe & Lachmann, 2003). The research primarily focused on interactive regulation in the dyad and psychological and biological developments during the first year of life; in particular, on the overarching aspect of dyadic affect regulation, which linked the psychoanalytic perspective on the emerging infant-parent relationship with empirical research on infant-parent interactions.

Psychoanalytic object relations (Kernberg, 1982; Winnicott, 1965) and attachment theorists (Ainsworth, 1973; Bowlby, 1980) agreed that repeated interactional experiences in the parent-infant relationship developed into internal representational models or 'internal working models' of early infant experience (Bowlby, 1969). The 'intersubjective development of the self' (Stern, 1985; Trevarthen, 1979, 1980) described the way in which the caregiver responded to the infant and helped modulate his internal states, manifested in the infant as neurophysiological events sculpting the developing brain and creating structural systems that would come to regulate behaviour, cognition and affect. For details see, 1.5. 'Neuropsychology, Neuropsychanalysis and Neurosciences' in relation to psychoanalytic theory on the infant.

1.3.1. Object Relations Theory

The theoretical backdrop for the differentiation of self and object emerges from René Spitz's 'hospitalism study' of deprived babies as well as his book about the development of 'object relations' (Spitz, 1945, Spitz & Cobliner, 1965), Margret Mahler's (1975) 'psychological birth' of a baby and description of development from symbiosis to individuation, Anni Bergman's (Bergman & Fahey, 1999) mutuality and thoughts about the development of a separate self and Winnicott's (1945) concept of the infant self emerging in the context of the early mother-infant relationship, the 'primary-object relationship'. His famous phrase 'there is no baby without a mother' (1960) and his recognition of the importance of the 'ordinary devoted or 'good enough mother' (1953), her 'primary maternal preoccupation', her 'holding' and 'mirroring' function (1956) and their impact on the baby's development of a 'sense of self' and

'going on being' are widely acknowledged (Stern, 1985) and resonate with later findings from infancy research (Trevarthen, 1979, 2001; Schore, 1994, 2003, 2012); for an overview see: Ammaniti & Gallese, 2014).

Bion (1959, 1962a,b, 1970) introduced the theory of 'containment' and a new term, the 'containing function', to describe the processes of the infant's 'learning by experience' within the interaction of the mother-baby dyad. His theory uses Klein's concept of projective identification to explain a conflicting meeting between the maternal mind, the 'container', and the baby's mind, the 'contained'. In his words, there are 'beta elements', primitive affective elements, which cannot be assimilated into the infant's mind and which are toxic if they cannot be contained and become processed. The capacity of the container enables the infant to experience those 'beta elements' if they become contained and therefore detoxified by the mother and her 'alpha function'. The 'psychic envelope' (see 1.2.1.) as previously referred to, is developed from these 'alpha elements'.

Winnicott's seminal paper on transitional objects was written in 1953, parallel to Anna Freud's thinking on infants and mothers. Winnicott (1953, 1958, 2005) defined psychic conflict at the border of the psyche, between 'inside' and 'outside', the self and the environment in an 'intermediate space' or 'transitional zone'. His theoretical construct of a psychic 'container' situated at the level of the self is similar to the ideas described by his colleagues (see 1.2.1). The 'good enough' mother (or caregiver) can contain primary affects and negative feeling states and helps the infant to internalise these affects, states and feelings without being overwhelmed by them. This 'good enough' mothering is needed in order to establish the infant's self. Challenges which cannot be contained, result not only in the impingement of the containing functions of the baby, but in the confusion between inner world and external world, the self and the environment and between narcissism and sexuality. Continuously overwhelming experiences that threaten the infant's defences result in a 'false self', a false organisation of the self, aimed at the protection of the real self, precluding a 'good enough' differentiation of self and object or the self and the environment.

"In other words, without a good-enough technique of infant care the new human being has no chance whatever. With a good-enough technique the centre of gravity of being in the environment-individual set-up can afford to lodge in the centre, in the kernel rather than in the shell. The human being now developing an entity from the centre can become localised in the baby's body and so can begin to create an external world at the same time as acquiring a limiting membrane and an inside. According to this theory

there was no external world at the beginning although we as observers could see an infant in an environment” (Winnicott, 1952, pp. 99 - 100).

1.3.2. Affect Regulation and the Development of Intersubjectivity

Regulation of states of arousal, affect, emotion, physiological rhythms is the central organising principle that links psychological and biological developments during the first year of life. Attachment theory provides an important and evidence-based framework for understanding how the infant’s need for protection and the caregiver’s reciprocal behavioural system for providing this protection is organised around the regulation of the infant’s primary states of arousal (Mikulincer, Shaver, & Pereg, 2003). It therefore follows that the regulation of emotional states is key to the adaptive function of the developing infant brain (Schoore, 1994, 2001a).

Attachment in this paradigm is seen as the dyadic regulation of emotion (Sroufe, 1996). Schoore (1994, 2000, 2001a) argues that the regulation of emotional states is key to the adaptive function of the developing infant brain and that the self-regulatory structures that enable new interactions between the individual and the social environment are located in the right brain. Consequently, attachment relationships are understood to be formative since they “facilitate the development of the brain’s major self-regulating mechanisms” (Fonagy & Target, 2002, p. 328). “The capacity to reflect on the mental world of others and the self assumes that the individual perceives the world of intentions, feelings, and beliefs to be a safe environment for exploration. We believe that this sense of safety, which evolves as part of an initially shared mental process between infant and caregiver, stays with the child as a relatively stable aspect of mental functioning” (Fonagy, Steele, Steele, Moran, & Higgitt, 1991, p. 215). ‘Why Love Matters’ is well described by Sue Gerhardt (2004) who states “the first higher brain capacities to develop are social, and they develop in response to social experience” (p. 38). The capacity of the mother to align herself and resonate with her infant’s internal states and then to regulate the arousal level of his positive and negative states is instrumental in creating a sense of safety for the infant and the capacity to explore novel situations and to display a wide range of affects. Fonagy and Target (2005, p. 334) conclude, “If the attachment relationship is indeed a major organiser of brain development, as many have accepted and suggested (e.g., Schoore, 1997, 2003), then the determinants of attachment relationships are important far beyond the provision of a fundamental sense of safety or security (Bowlby, 1988)”.

Schore defines the fundamental processes that mediate attachment as “psychobiological attunement, interactive resonance of feeling states, and the mutual synchronization and entrainment of physiological rhythms” (Schore, 2003, p. 39). Through sequences of attunement, misattunement, and re-attunement an infant becomes a person, achieving a ‘psychological birth’ (Mahler et al., 1975). Relational regulatory transactions impact on the development of psychic structure and generate brain development (Schore, 1994; Schore & Schore, 2008). In order to structure the enormous body of psychoanalytic thinking on the infant, the infant’s development of the self and the ‘birth of intersubjectivity’, I will follow Stern’s (1985) work on the ‘sense of self’ and the four stages he depicts to outline the remarkable development over the first two years of life. In his understanding the ‘emergent self’ is formed in the process of communication, interaction and relation becoming more and more variable, precise, abstract and complex, characterised by the level of differentiation between infant and mother.

1. The emergent self or ‘core self’ (Stern, 1985) has to contend with a world of sensations, perceptions and sensory stimuli which need be deciphered within the emerging primary relationship. Trevarthen (2001) describes the innate intersubjectivity of a new-born as ‘primary intersubjectivity’. This first stage for the emerging self is based on sensory experiences, such as touch, smell and vision, and is deeply connected to the concept of Bick’s (1968) ‘psychic skin’, a first step of differentiation from the mother. More recent research indicates that “intersubjectivity is not exclusively confined to a declarative meta-representational third-person perspective” (Ammaniti & Gallese, 2014, p. 9) and suggests that intersubjectivity involves “the mapping of the other onto the self, reciprocated by the mapping of the self on the other, ‘the other’ being a ‘bodily self’ ” (Ammaniti & Gallese, 2014, p. 8).

2. The emotional basis of the self of the infant emerges through ‘proto-conversation’ (Trevarthen, 1979, 2001) within the immediate social world with his mother. The affect attunement between infant and mother, in particular the marked affect mirroring (an over-pronounced way of mirroring the infant’s affective state) the mother provides, helps the baby to develop this second step of differentiation from the mother. Marked affective mirroring communicates to the infant that the mother’s reaction is not representative of her own affective state. Through the internalisation of the caregiver’s representations of its primary affective states as secondary representations, the infant incorporates these into its representation of his self (Gergely & Watson, 1996)

Several studies empirically support that the infant’s bodily based communications of

state through eye contact, facial expression, vocalisations and gestures are 'assimilating the rhythm of their interactions to their caretakers' (Legerstee, 2009; Schore, 1994, 2003, 2012; for an overview see: Ammaniti & Gallese, 2014).

3. The third differentiation from the mother is defined by the development of a 'subjective self', or 'secondary intersubjectivity', developed within the intersubjective field and leading to a 'state of mind' through differentiation between one's own mind and the mind of the other. This is a huge developmental step towards 'Theory of Mind', based on the internalisation of attachment figures (Bowlby, 1988) and evidenced through findings from neuroscience showing the alterations of the brain development in mothers and infants and the relationally induced changes in their subjectivities (Schore, 2014; Ammaniti & Gallese, 2014).

4. The fourth step of the differentiation from the mother and the parental psychic space is the development of the 'verbal self' at around 15 months of age (Stern, 1985), as developed within the verbal interpersonal relationship. It is based on actions that produce representations and is followed by the significant move into the 'world of stories', where the toddler can differentiate its own story in relation to what happens to others.

These theoretical conceptualisations, empirically derived from infancy research, are grounded in recent advances in developmental neuroscience, neuropsychology and relational psychoanalysis. For details see 1.5., 'Neuropsychology, Neuropsychanalysis and Neurosciences' in relation to psychoanalytic theory on the infant.

1.3.3. The Idea of the Third

Psychoanalytic thinking on the emerging self of the infant and attachment theory described in this chapter so far focuses on the dyadic relationship between mother and infant. Based on Klein's (1929) concept of the early Oedipal situation and Bion's (1959, 1962a,b) theory of containment, several psychoanalysts arrived at a revised positioning on the 'Oedipus Complex' (Britton, Feldman & O'Shaughnessey, 1989; Tronick & Beeghley, 2011). From a Kleinian perspective (Britton et al., 1989) the Oedipal father is the true 'third', who embodies difference and may be seen as a potential threat to the intimacy of the dyadic mother-infant relationship as, "The initial recognition of the

parental sexual relationship involves the relinquishing of the sole and permanent possession of the mother and leads to a profound sense of loss, which, if not tolerated, may become a sense of persecution” (Britton, 1989, p. 84). The acknowledgement by the child of the parents' relationship with one other creates a triadic relationship and a 'triangular space' of infant, mother and father (Britton, 1989). The experience of different objects, namely mother and father, unites the psychic world of the infant to a world shared with his two parents in which different object relationships can exist. The 'triangular space' of infant, mother and father (Britton, 1989), the 'oedipal triangle', provides a new boundary for the internal world of the baby. This 'triangular space' is defined as “the space bounded by the three persons of the Oedipal situation and all of their potential relationships. It includes, therefore, the possibility of being a participant in a relationship and observed by a third person as well as being an observer of a relationship between two people” (Britton, 1989, p. 86). This primal family triangle creates separate relationships between the infant and his mother and father and confronts him with their relationship, which excludes himself. The infant's mind faces the challenge of tolerating the exclusion from this relationship and creates, if tolerated, a third kind of object relationship in which the baby is an observer but not a participant. The Oedipal dilemma of loving and hating the father for his intrusion into the dyadic nurturing relationship between a male baby and his mother is based on subjectivity, object relationships and ambivalence which needs to become integrated in order to form the belief of a secure world of relational links (Ogden, 1989). This successful integration leads to the development of the 'third position' from where object relationships can be observed (Britton, 1989). “The capacity to envisage a benign parental relationship influences the development of a space outside the self, capable of being observed and thought about, which provides the basis for a belief in a secure and stable world” (Britton, 1989, p. 87).

Fonagy (1991) notes, “I would like to argue that fundamental to the acquisition of these [mentalizing] capacities is a degree of consistency and safety in early object relationships and “good enough” psychic functioning in the parents to empower the process of internalization” (p. 642). In the introduction to their book 'Affect Regulation, Mentalization and the Development of the Self', Fonagy, Gergely, Jurist and Target present an overview of the way in which the infant develops a sense of his and others' mental states, leading to a mentalizing self-organisation. The secure infant is able to explore the sensitive caregiver's mental states in order to find in the caregiver's mind an image of his own feelings, beliefs and intentions, an image of himself (Fonagy et al., 2002). Family relations are imperative for mentalizing and mentalizing is imperative for the development of attachment security as well as for the socio-cognitive development

of the child (Sharp & Fonagy, 2008). Slade (2005) summarizes mentalization as a cognitive process, akin to psychological insight or perspective-taking, and an emotional process, that is, the capacity to hold, regulate, and fully experience one's own and others' emotions in a non-defensive way without becoming overwhelmed. The above findings suggest that the third, e.g. the father, enables the infant to observe and become observed, to begin mentalizing, to take perspectives, to experience alternative ways of meaning-making to the maternal perspective, and to be played with in a way that differs from a mother's way of playing, allowing the infant to develop a capacity 'to play with reality'.

The pioneering observations of father–mother–infant interactions (Lamb, 1976) and more recent observational studies were often more focused on the parents' rather than the infant's role within the triad (McHale & Cowan, 1996). Triadic interactions (person–person–object) should be differentiated from 'triangular' interactions (person–person–person) (Barton & Tomasello, 1991; Dunn, 1991; Fivaz-Depeursinge, Favez, Lavanchy, De Noni, & Frascarolo, 2005). When monitoring interactions, young infants respond differently to a person-to-person versus a person-to-object situation (for a review, see Nadel & Tremblay-Leveau, 1999). Given that we live in a world of multi-person relationships and children are more frequently in multi-person contexts than in strict dyadic interactions from birth onwards (Schaffer, 1984), the infant develops interactional capacities in triangular interactions over the course of its development from infancy to childhood.

1.4. The 'Empirical Infant' and Research on the Quality of the Parent-Infant Relationship

The 'empirical baby' is observed on a more scientific basis, with methods that are more similar in standardisation and replicability to those of other kinds of empirical psychology (Fonagy, 2003; Rustin, 2006). The 'objects' of study for laboratory-based scientists of infancy are behaviours, repertoires of expression and patterns of interaction that are amenable to direct observation if the observational setting remains constant and if the pace of observation is reduced through the study of comparable video-taped episodes of interaction. Repetitive observation and interdisciplinary discussion of videotaped interactional behaviours delineate matching and derailed exchanges and facilitate theoretical conjectures about 'hidden objects' ('internal working models', for example) which may be responsible for observable effects on behaviours.

Despite concerns from a psychoanalytic perspective, that empirically-based research is in danger of destroying the specificity of psychoanalysis and risks leading to oversimplification (Sandler, Sandler, & Davies, 2000), laboratory-based observations of infants and their caregivers have proved extremely valuable in investigating the minute subtleties of 'patterns of mutual regulation' between mother and infant (Beebe & Lachmann, 1988), from the earliest days of life, as well as in examining the trajectories of parental thoughts, preoccupations and parental behaviours.

Paradigms for empirical research on the parent-infant relationship derived from theory, and were conceptualised through assessing, testing and confirming the theory. Strikingly, theory and conceptualisation developed from assessment methods, as well as measurement, which often generated a range of unexpected findings that would in turn lead to the formulation of new theoretical constructs. Examining empirical research on the parent-infant relationship, two widely used observational paradigms have heavily influenced the theoretical landscape, that of the 'Still-Face Paradigm' (SFP; Tronick et al., 1978) and the 'Strange Situation Procedure' (SSP; Ainsworth et al., 1978) described in 1.2.2.1. The SFP consists of three, 2-minute phases: interaction, still-face and reunion. During the interaction and reunion phases, mothers were instructed to interact as they typically would with their infants, without any toys. During the still-face phase, mothers were asked to abruptly stop interacting with their infants and assume a neutral expression while continuing to look at their infants (Tronick et al., 1978). The 'Still-Face Procedure' (SFP) has been used to observe the impact of maternal depression on the infant, whom the observers anticipated would present as depressed and withdrawn but rather demonstrated a variety of behaviours to engage the mother in mutual interaction (Tronick, Adamson, Als, & Brazelton, 1975). The Face-

to-Face SFP has been used extensively to evaluate young infants' impressive communication abilities, sensitivity to changes in maternal behaviour and capacity to regulate affective states (Apter et al., 2017; Beebe et al., 2010; Braungart-Rieker, Zentall et al., 2014; Fuertes, Santos, Beehly, & Tronick, 2006; Tronick, 1989, 2003; Tronick & Cohn, 1989; Tronick & Reck, 2009; Weinberg & Tronick, 1994, 1996; Vieites & Reeb-Sutherland, 2017). As with the impressive body of research based on the SFP, the Strange Situation Procedure (SSP), examining the infant's reaction to separation from their caregiver, highlighted further discoveries including observed infantile defences, affect regulation and the identification of disorganised attachment (Solomon & George, 1999, 2006). Disorganization theory, which focused on the impact of parental trauma and dissociation, was prompted by the need to understand those infants for whom the behaviours did not correspond with the existing categories. A significant body of research stemmed from the need to not only recognise, but to try to understand these inconsistencies, countering the human mind's tendency to seek consistency and, according to cognitive psychology, dissolve inconsistencies. These findings stimulated further research on unresolved trauma and disorganisation, as well as on a variety of infant behaviours causing concern (Crittenden, 1988; Crittenden & DiLalla, 1988; De Wolff & van IJzendoorn, 1997; Fraiberg, 1982; Solomon & George, 1999, 2006) and around parental atypical and disorganized patterns of interacting (Abrams, Rifkin, & Hesse, 2006; Bronfman, Parsons, & Lyons-Ruth, 2004; Granqvist et al., 2017; Lyons-Ruth & Jacobovitz, 1999, 2008; Out, Bakermans-Kranenburg, & van IJzendoorn, 2009; Madigan, Bakermans-Kranenburg et al., 2006; Main & Hesse, 1998; McMahan True, Pisani, & Oumar, 2001; Schuengel, Bakermans-Kranenburg, van IJzendoorn, & Blom, 1999).

The quality of the early parent-infant relationship has been examined from two different perspectives (Sleed & Fonagy, 2010). The first is observation of the parent-infant relationship focusing on patterns of parental interaction and behaviours that either promote healthy social and emotional development in which the infant's behaviours indicate a positive development or create risk of a derailed development of the early relationship, such as overtly traumatising behaviours based on parental traumatic experiences or mental health issues, in which infant behaviours indicate the development of a disorganized attachment pattern. Particular attention is given to nonverbal communications and communication errors (Beebe et al., 2012; Beebe & Steele, 2013; Lyons-Ruth, Bronfman, & Parsons, 1999) which are associated with disorganized attachments.

The second perspective assesses "the mental representations, or internal working models, that each partner brings to the relationship and that are formed within the relationship as it develops" (Fonagy & Sleed, 2010, p. 136).

The following paragraphs provide an overview of the most relevant parental, infant and dyadic behaviours and qualities shaping, as well as defining, the quality of the parent-infant relationship.

1.4.1. Parental Behaviours

Parental interactional behaviours and mental capacities, such as sensitivity, reflective functioning, emotional attentiveness and availability, stimulation, play, teaching, directiveness, demandingness, structuring and controlling behaviours are core concepts to describe the quality of parent-infant interactions (Ainsworth, 1973, 1976; Ainsworth et al., 1974; Biringen et al., 2008; Crittenden, 1988, 1990; Gergely & Watson, 1996; Tronick & Cohn, 1989; Slade, Belsky, Aber, & Phelps, 1999). Parental sensitivity (Ainsworth et al., 1978) emphasises the importance of clarity of perception and prompt responsiveness to the infant's signals, in a time appropriate and flexible way. In many conceptualisations of sensitivity, the emphasis is on 'behavioural' sensitivity, not on 'emotional' responsiveness (Bretherton, 2000). The concept of 'emotional availability' expands sensitivity to include 'emotional' and 'dyadic' features (e.g. caregiver sensitivity, non-hostility, structuring, non-intrusiveness, child responsiveness and involvement). Mahler, Pine, and Bergman (1975) first used the term 'emotional availability' to describe a mother's supportive attitude and presence in the context of infant/toddler explorations away from her. "Emotional availability refers to an individual's emotional responsiveness and 'attunement' to another's needs and goals; key is the acceptance of a wide range of emotions rather than responsiveness solely to distress" (Emde, 1980, p. 80), or, in other words, the adult's 'receptive presence' to the child's emotional signals (Emde (1983, 2000). Emde and Easterbrooks (1985) stated that emotional availability is an 'affective barometer' of the relationship between a parent and a child and placed an emphasis on affective attunement to a broad spectrum of negative as well as positive emotions. More recent microranalytic research confirmed the prediction of infant attachment from observations of parent-infant interactions and their contribution to theoretical concepts of maternal sensitivity (Beebe et al, 2010). Microanalysis opens up an additional approach to observe the subtleties of face-to-face interactions, providing a set of behaviours to extend our understanding of the origins of infant attachment and of maternal sensitivity (Beebe & Steele, 2013). Sensitivity, and concepts derived from sensitivity, such as 'emotional availability' remain among the most widely used concepts for assessing the

quality of the parent-infant relationship in clinical as well as in research settings. For details, see Chapter 2.

Research on the impact of parental mental illness, such as postpartum depression, anxiety disorder, post-traumatic stress disorder (PTSD) and borderline personality disorder found these to be key risk factors leading to a disturbed parent-infant interaction and a poor quality parent-infant relationship (Beck, 2002; Brockington, 2004; Feldman et al., 2009; Field, 2010; Fonagy & Luyten, 2009; Lyons-Ruth, Bureau, Holmes, Easterbrooks, & Brooks 2012; Murray, 1992; Muzik et al, 2013; Parfitt & Ayers, 2009; Schechter et al., 2014). Selma Fraiberg's seminal paper on the 'ghosts in the nursery' (Fraiberg, Adelson, & Shapiro, 1975) links parental preoccupation and current functioning with their own early experiences (that is the unremembered, maybe traumatic influences, from their past) and the way in which these impact the infant's emotional well-being, with the risk of failures and disruptions in the developing parent-infant attachment relationship. Within parental representations, negative, age-inappropriate and 'distorted' representations are found to be indicative of relational risk (Lieberman, 1999, 2004; Lyons-Ruth & Block, 1996; Schechter et al., 2009; Zeanah et al., 1993), and are particularly found in the context of maternal PTSD and depression (Murray, 1992; Murray, Fiori-Cowley, Hooper, & Cooper, 1996a; Schechter et al, 2014; Tronick & Reck, 2009) and neglect and maltreatment (Crittenden, 1985, 1990, 2007). Internalised negative representations are projected onto the infant, departing from the infant's actual state, feelings, motivations and actions. "Strongly negative attributions are not responsive to the actual state or actions of the child" (Schechter et al., 2014, p. 10) and strain the emerging infant's sense of self and intimate relationships (Lieberman, 1999).

Problematic parental interactional behaviours include contradictory or competing caregiving strategies, withdrawal or role-reversal, disrupted interactions without repair, intrusiveness, sexualized behaviour and hostile and helpless states (Feldman, 2007; Field, 1989, 1994, 2010; Lovejoy, Graczyk, O'Hare, & Neuman, 2000; Lyons-Ruth, Zeanah, Benoit, Madigan, & Mills-Koonce, 2014; Macfie, Fitzpatrick, Rivas, & Cox, 2008; Macfie, Brumariu, & Lyons-Ruth, 2015; Main & Hesse, 2005; Murray et al., 1996a; Tronick & Reck, 2009). Atypical and disorganized parental patterns of interacting, disconnected behaviours or extremely insensitive and frightening/frightened behaviours which might indicate dissociative states are predictive of infant disorganization (Abrams et al., 2006; Bronfman et al., 2004; Lyons-Ruth & Jacobovitz, 1999, 2008; Madigan, Bakermans-Kranenburg et al., 2006; Madigan, Moran, & Pederson, 2006; Main & Hesse, 1998; McMahan True et al., 2001; Out et al., 2009; Schuengel, Bakermans-Kranenburg, van IJzendoorn, & Blom, 1999; Byun, Brumariu, &

Lyons-Ruth; 2016). These behaviours are indicators of risk in themselves and therefore of importance when assessing the quality of the parent-infant relationship. Extremely insensitive, aggressive and intrusive maternal behaviours have negative implications for a wide range of child outcomes, including increased stress-reactivity (Hane & Fox, 2006), poorer attentional control (Belsky, Fearon, & Bell, 2007; Ensink, Rousseau, Biberdzic, Bégin, & Normandin, 2017) and attachment disorganization (Lyons-Ruth, Bronfman, & Parsons, 1999). Furthermore, atypical and disconnected maternal behaviours, including frightened or frightening parental behaviour, role reversal, dissociation, and disrupted behaviour (Lyons-Ruth, Bronfman, & Parsons, 1999), have been shown to contribute to the development of infant attachment disorganization (Ensink et. al, 2017; Hesse & Main, 1999; Lyons-Ruth, Bronfman, & Atwood, 1999; Out et al., 2009). Extreme insensitivity and 'frightened, threatening and dissociative behaviors' (FR behaviours; Main & Hesse, 1990) may indicate a dissociative state in the parent (Lyons-Ruth, Bronfman, & Parsons, 1999; Main & Hesse, 1990; for a meta-analysis see Madigan, Bakermans-Kranenburg et al., 2006). FR behaviours are described in more detail as threatening (e.g. looming), frightened (e.g. backing away from the infant whilst stammering in an unusual and frightened voice, 'D-don't follow me, d-don't'), dissociated (e.g. using a 'haunted' voice whilst interacting with the infant), sexual (e.g. excessive intimate or sexualized caressing of the baby), deferential/timid (e.g. interacting with the infant as though the infant was in control and powerful) and disorganized (e.g. mistimed or asymmetrical movements) (Main & Hesse, 1998, 2006).

Unresolved loss or trauma may also negatively affect the ability of the caregiver to perceive and respond to the child's signals in a sensitive and responsive way (Lyons-Ruth, Bronfman, & Atwood, 1999; Lyons-Ruth, Bronfman, & Parsons, 1999). It is hypothesised that the parents' attempts to defend themselves against re-experiencing the fear, helplessness and anger associated with their trauma may result in "repeated failure to comfort and soothe children when their attachment system is activated" (Lyons-Ruth & Block, 1996, p. 272), emotional and physical withdrawal, unresponsiveness or negative, hostile and intrusive behaviours. These behaviours and the parent's inability to repair disruptions are thought to leave the child in a state of extreme fear (George & Solomon, 1999).

1.4.2. Infant Behaviours

Infant behaviours are differentiated by overt behaviours and affective states in relation to parent-infant interaction. Gaze or eye contact, vocalisation, talk, attentiveness, responsiveness, cooperativity, reactivity and contingency, readiness to interact and infant's passivity, struggle for control, and irritability have all been shown as predictors of the quality of the developing infant-parent relationship (Crittenden, 1988, 1990; De Wolff & van IJzendoorn, 1997; Esser, Scheven, Petrova, Laucht, & Schmidt, 1990; Papoušek & Papoušek, 2002). Not only is the parent's sensitivity and emotional availability important for the infant, the infant needs to be emotionally available to the parent in order to let the parent know how he has been feeling, to communicate that the parent is needed and appreciated and to demonstrate that being with the parent is enjoyable. The child's emotional availability to the parent enables a mutual and satisfying exchange (Biringen et al., 2014).

A variety of infant behaviours in parent-infant interaction are cause for concern, including very passive, 'compulsive-compliant' or frightened behaviours, avoidance, clinging, freezing, stilling, dissociation and disorganized behaviours (Crittenden, 1988; Crittenden & DiLalla, 1988; Fraiberg, 1982; Solomon & George, 1999, 2006). Selma Fraiberg's (1982, 1987) observation of pathological defences in infants aged between three and eighteen months such as 'avoidance', 'freezing' and 'fighting' and her observation of early dissociative states is fundamental to our understanding of infants' early experience of negative affects e.g. fear, frightening behaviours and their effects on affect regulation and the development of the self. Whereas infants with organised attachment strategies were able to maintain behavioural and attentional organisation as they resolved their distress during fear-inducing and stressful situations (Main, 2000), infants with disorganized attachment patterns demonstrated a breakdown within one of these coherent forms of attachment in the face of stress (Main & Solomon, 1990; Out et al., 2009). These infants displayed often very contradictory and inexplicable behaviours, such as proximity seeking followed by avoidance or freezing; avoidance coupled with expressions of strong distress; undirected, misdirected, incomplete or interrupted movements or expressions; asymmetrical movements; mistimed movements; anomalous postures; stilling; and slowed movement (Main & Solomon, 1986, 1990). In stressful situations, these infants may be understood to perceive their parents as the only potential source of comfort and protection while at the same time they feel frightened of them, which results in an irresolvable paradox (Main & Hesse, 1990; Main & Solomon, 1990) similar to abusive or maltreating parenting. These infants learn to inhibit behaviour the parent would disapprove of in order to protect the attachment to the parent and to protect themselves from harsh,

hostile, frightening or dissociative parental behaviour, thereby developing 'compulsive-compliant' coping strategies (Crittenden, 1985; Crittenden & DiLalla, 1988). In the toddler period they might develop coercive strategies, such as demanding, aggressive or disruptive behaviours (Crittenden, 1995).

Disorganized behaviours in the infant can occur for a variety of reasons, such as maltreatment, developmental risk, or parental mental illness and frightening/frightened, and dissociative parental behaviours common among caregivers struggling with unresolved loss/trauma or multiple compounded socioeconomic risks, major (extended or repeated) separations under adverse conditions, and congenital factors, possibly in combination with caregiver factors (Granqvist et al., 2017; Lakatos et al., 2000 ; Padrón Carlson, & Sroufe, 2014 ; Spangler, Fremmer-Bombik, & Grossmann, 1996).

1.4.3. Dyadic Quality of the Parent-Infant Interaction

Research on the quality of the parent-infant relationship and the concepts to be assessed, such as maternal sensitivity, primarily focused on the individual characteristics of the adult and only implicitly on the dyadic quality of the relationship. Therefore, an individual caregiver might appear to be sensitive without the child's behaviour being considered, or a reliable coder assessing parental sensitivity might not take the infant's impact on the relationship into account. A major influence on the conceptualisation of the dyadic quality of the parent-infant relationship came from systemic theories (e.g. Guttman, 1991), which recognised the importance of seeing relationships as units, rather than as individuals providing certain qualities. One member of the relationship is viewed as profoundly affecting another member's behaviours and emotional responsiveness. The systemic perspective particularly emphasises the importance of perceiving all the members of a relationship as interwoven within a whole that cannot be understood by simply considering the parts, namely, the individuals. This view is also reminiscent of the transactional perspective (Sameroff & Fiese, 2000), emphasising the infant's and parent's contribution to the interaction as well as the dynamic change in their relationship over time. Assessment of the dyadic quality of the parent-infant relationship therefore often uses a bi-directional approach and focuses not only on intrinsically dyadic qualities but also on the parent-infant and infant-parent relationship. 'Dyadic' here is defined as the mutual influence of both parents' and infants' actions regulating those of the other (Fogel & Branco, 1997; Gianino & Tronick, 1988).

The dynamic, dyadic systems view of mother–infant face-to-face communication (Beebe et al., 2012). considers self- and interactive processes in relation to one another, observed by split-screen videotaped interactions coded on a 1-s time base for communication modalities of attention, affect, orientation, touch, and composite facial-visual engagement (Beebe et al., 2016). This research found moment-to-moment predictability within each partner (self-contingency), and between the partners (interactive contingency) to characterise the mother–infant communication. Self-contingency was found to organise communication to a far greater extent than interactive contingency. These findings support the concept that the dyad is a fundamental unit of analysis in the investigation of early interaction (Beebe et al., 2016).

The dyadic quality of the parent-infant interaction emerges within reciprocity, responsiveness, synchrony, contingency and maintenance of the interaction through vocal matching between two relationship partners, such as mother and infant or father and infant. They include dyadic interactions of eye contact/gaze and physical contact, joint attention and warm affective tone, affect attunement and a balance between ‘mismatch’ and ‘repair’. Research shows the impact of these communications on the development of the cognitive structures of the self, the mental capacities of the baby and the subsequent development of mentalization (Ainsworth et al., 1974; Bretherton, 1990; Csibra & Gergely, 2006; De Wolff & van IJzendoorn, 1997; Gergely & Unoka, 2008; Tronick, 1989; Tronick, Als, & Brazelton, 1977; Tronick & Cohn, 1989).

Mature new-borns already demonstrate specific communicative patterns in the manner of their cry (Wolff, 1967) and repetitive-rhythmic organisation of the mother–infant face-to-face interaction. There is a careful adaptation to the other’s rhythms (Brazelton, Koslowski & Main, 1974; Lavelli & Fogel, 2002). Feldman & Eidelman (2007) show ways in which new-borns engage in ‘sporadic alert-scanning behaviours’ whilst their mothers adapt to their alert state by gazing at the infant’s face, deploying high-pitched vocalizations, positive expressions and affectionate touch in order to provide the first contingency between the infant’s internal state and the caregiver’s behaviour. Dyadic interactional behaviours between parents and infants also include ‘intuitive parenting behaviours’ (Papoušek & Papoušek, 1974), which help the baby to regulate affect and are therefore understood as dyadic (Crittenden, 1992). Papoušek and Papoušek (1974, 2002), demonstrate the infant’s mirror-image and self-recognition emerging from the very early experience of interaction with an intuitive parent. This intuitive parenting includes the caregiver’s mirroring of the infant’s affect with a ‘marked affect’ of their own in order to differentiate between affects, as well as modulation of the baby’s

arousal and well-timed parental responsiveness to infant cues, and a reflective capacity to think about the baby's state, needs and affective experience (Gergely, 1995, 2007; Gergely & Watson, 1996; Katznelson, 2014; Meltzoff, 1990; Papoušek & Papoušek, 1974, 1989, 2002; Slade, 2005). Maternal mirroring describes the process of sequentially mirroring the infant's signals and responding in an affectively attuned manner, as described by Gergely & Watson (1996) in their paper 'The Social Biofeedback Theory of Parental Affect-Mirroring'. Parental mirroring of the infant's affective states not only helps the infant to recognise and categorise his own feelings but also regulates the infant's affective state. Recent research suggests a contrast between two forms of mirroring, 'direct mirroring', as described above, and 'intention mirroring'. Within intention mirroring, "the mother's ostensive verbalization of the infant's internal state, marked as distinct from the infant's own experience", as 'intention mirroring' is indicative of 'secure mothers' well attuned, affect mirroring communication with their infants" (Kim et al., 2014, p. 491).

These dyadic processes of parental regulation of the infant's affect and states are called 'co-regulation' (Tronick & Beeghly, 2011, Papoušek, 1974, 2002). Contemporary research shows the process of parental co-regulation to be influenced by the parent's own capacity for self-regulation (Beebe et al., 2010; Tronick & Beeghly, 2011). Infants with overly supportive parents were found not to self-regulate effectively and therefore become more vulnerable to stress when left without the caregiver's support (Beebe et al., 2010; Bernier, Carlson, & Whipple, 2010). Infants with overly intrusive parents were found to evade social engagement due to their avoidant strategy, impacting on their development over the long term (Beeghly & Cicchetti, 1994; Sroufe, 2009).

Recent research found that interactive contingency is organized by a bidirectional, but asymmetrical, process, as maternal contingent coordination with infant is higher than that of infant with mother (Beebe, Messinger, Bahrnick, & Buck, 2016). The caregiver's careful adaptation to the infant's signals, including sensitivity, co-regulation and attunement, is considered to be essential for the infant's social-emotional growth (Feldman, 2007). Examining the considerable body of research since the 1960s, one could identify synchrony (Feldman, 2007, 2012) as a meaningful concept for the study of affiliative bonds in general and parenting in particular. Synchrony of the interaction focuses on the coordination of nonverbal behaviours such as gaze, affect, vocalisations, body movements and indicators of arousal (Feldman, 2007), highlighting the time-based component of the ongoing organisation of social behaviour into repetitive-rhythmic sequences (Bernieri & Rosenthal, 1991). As the subtleties of this

development over the first year of life seem relevant for the assessment of the quality of the parent-infant interaction, the development of synchrony from concurrent to sequential and organised in an ongoing patterned format, is described here (for an overview see Feldman, 2007). Concurrent relations refer to co-occurrences of specific behaviours in parent and child, such as the co-occurrence of social gaze, vocalising together, the matching of arousal level, or the coordination of parent affectionate touch with the infant's social gaze (Feldman & Eidelman, 2004). Sequential relations consider typical chains of behaviours that result in repetitive 'configurations'. For example, maternal positive affect typically precedes the infant's affect becoming positive, and infant babbling often follows maternal gaze. The patterned relationship is an ongoing 'dance' between parent and infant moving between higher or lower affective involvement. As the infant shifts gaze from lack of interest to attentiveness, within seconds, the mother responds with a parallel shift from quiet observation to positive arousal and stimulation. All forms of synchrony develop further from the age of six months, but co-occurrences of social gaze and co-vocalisations, and the time lag to responsivity decreases. At the end of the first year, infants begin to use symbols through words and gestures and sequential relations emerge between the parent's elaboration of the child's symbolic play and an increase in symbolic complexity.

In the research focusing on dyadic synchrony, optimal functioning within the mother–infant interaction was characterised by long periods of mutual gazing and vocalising, high levels of shared positive affect expressed by big smiles, and low levels of anger, sadness, or distress (e.g. Brazelton et al., 1974; Stern, 1985; Trevarthen, 1993). Tronick and Beeghley (2011, p. 111) critiqued this research on dyadic synchrony in the parent-infant relationship as “lovely and romantic, but subsequent microanalytic research on infant–parent *en face* interaction has provided little support for this view” (e.g. Beebe et al., 2008; Tronick, 1989; Tronick & Cohn, 1989). Notably, dyadic matching is associated with infants' positive affect and engagement, whereas dyadic mismatches are associated with infants' negative affect and dysregulation (Tronick, 1989). Tronick and Beeghley (2011, p. 112) argue that the parent-infant dance is hardly perfect but 'messy', as systems terminology would put it, moving “from matching (coordinated, synchronous) states of shared meanings and intentionality to mismatched (miscoordinated, dyssynchronous) states and back to matching intentional states via an active, jointly carried out reparatory process” (Tronick, 2008; Tronick et al., 1998). Their recent research highlights how 'dyadic meaning making' and 'reparation' develop within the mutual regulation of each individual's meanings, intentions, and relational goals (Beeghly & Tronick, 1994; Tronick, 1989; Tronick & Beeghley, 2011). Video microanalysis has demonstrated that infant-caregiver dyads

typically repair interactive mismatches rapidly via co-creative processes, with implications for shared meaning-making. Gianino & Tronick (1988) found that mother–infant mismatches were repaired 70% of the time in the next interactive step, with new reparations occurring about every three to five seconds and, in turn, the newly formed dyadic matches were followed by the reemergence of mismatches, which were followed by reparation of mismatches to matches. This reparation, Tronick & Beeghley hypothesise, can be understood as the formation of new meanings and ways of being with others, an implicit relational knowledge (Tronick et al., 1998).

Research into the impact of parental mental illness, e.g. postpartum depression and borderline personality disorder, on dyadic parent–infant interactional patterns helps to identify those features which indicate risk for the baby’s development, such as dyadic negative states, dyadic conflict, struggle for control, non-contingent and disrupted interactions without repair (Field, 2010; Fonagy, Target, & Gergely, 2000; Fonagy, Target, Gergely, Allen, & Bateman, 2003; Lyons-Ruth, Bronfman, & Atwood, 1999; Marcoux, Bernier, Séguin, Armerding, & Lyons-Ruth, 2016; Tronick & Cohn, 1989; Tronick & Reck, 2009). Specifically, parental disrupted interactions and disorganized attachment behaviours in infants are strongly predictive of later psychopathology (Carlson, 1998; Lyons-Ruth & Jacobvitz, 1999, 2008; Lyons-Ruth et al., 2012; Madigan, Bakermans-Kranenburg et al., 2006; Sroufe, 2005). The level of maternal postpartum depression and behaviour predicts infant–parent synchrony at three months of age and the child’s cognitive and neurobehavioural development across the first year (Feldman & Eidelman, 2007).

1.5. Neuropsychology, Neuropsychanalysis and Neuroscience and their Impact on Psychoanalytic Theory of the Parent-Infant Relationship

Psychoanalysis and neuroscience are distinct fields of study (Bazan, 2011) explaining the same phenomena. Early relational experiences during infancy have for many decades been acknowledged as important predictors of later development. Recent advances in neuroscience and genetic research have elucidated the extent to which very early relationships between infants and their caregivers can shape the neurobiological and psychological development of the individual, across generations (Bokhorst et al., 2003; Lyons-Ruth & Jacobvitz, 2008; Schore, 1994, 2001b, 2002; Siegel, 2001; Strathearn, Fonagy, Amico, & Montague, 2009).

From a neurophysiological point of view the concept of ego is created by a series of neurophysiological findings showing that the systems underlying the organization of action and conscious perception are both mediated by a cortical motor network formed by parieto-frontal circuits, with strong similarities to that postulated by Freud for the conscious part of ego, whereas the default-mode of this network might represent that part of ego that is mostly involved in unconscious processes (Rizzolatti, Semi, & Fabbri-Destro, 2013). Infancy is a period marked by rapid brain growth (Dobbing & Sands, 1973). Significantly, it is also a period when the neurological pathways that become established, through myelination and selective dendritic and synaptic pruning, are highly dependent on the infant's social environment (Johnson, 2001). Behavioural genetic research has also uncovered the importance of early environmental factors for the phenotypic expression of biological genotypes (Geary, 2006; Rutter, Kim-Cohen, & Maughan, 2006; Rutter, Moffitt, & Caspi, 2006). The primary context for these earliest social experiences is the parent-infant relationship. Neuroscientific theories on relational psychoanalysis regarding the parent-infant relationship look at the baby's brain during the process of relating to a caregiver to confirm the conceptualisations of affect regulation and mirroring.

The regulatory function of the mother-infant interaction is essential in promoting the development and maintenance of synaptic connections during the establishment of functional circuits within the right brain (Henry, 1993; Schore, 1994; Sullivan & Gratton, 2002). The formation of the mother–infant bond draws on the timely provision of well-adapted maternal behaviours during the early post-partum period (Bowlby, 1969; Feldman et al, 2009; Tronick, 1989). These patterns of maternal care initiate epigenetic processes that shape gene expression, organise the oxytocinergic system that supports bonding and attachment and determine the infant's capacity to handle stress

(Champagne, 2008; Weaver et al., 2004; Brumariu, Bureau, Nemoda, Sasvari-Szekely, & Lyons-Ruth, 2015). Optimal mothering involves the synchronous coordination between maternal behaviour and the infant's social readiness (Feldman, 2007), with the degree of interactive synchrony being associated with peripheral measures of oxytocin in both parent and child (Feldman, Gordon, & Zagoory-Sharon, 2010, 2011). Contrary to this, intrusive mothering correlates with maternal anxiety and is expressed in excessive maternal behaviours disregarding the child's communications and providing stimulation when the infant wishes the mother to stop (Kaitz & Maytal, 2005). Recent research explored the role of the short allele of the serotonin transporter polymorphism (5-HTTLPR) in enhancing sensitivity to fearful and negative affect, which has been well established. Consistent with previous findings, the 5-HTTLPR short allele was significantly related to the infant's proneness to distress (wariness and distress) but was not related to attachment security or attachment disorganization (Brumariu et al., 2015). Parallel, research confirmed the interaction between methylation density and serotonin transporter genotype predicts unresolved loss or trauma (Van IJzendoorn, Caspers, Bakermans-Kranenburg, Beach, & Philibert, 2010).

Many primary-process subcortical attentional, emotional and motivational processes (Merker, 2007; Panksepp, 1998), such as play/joy, care/nurturance and panic/separation distress (Panksepp, 2008) are especially important in motivating the inter-subjective dance between mother and child (Schore, 2003; Trevarthen, 2001). Maternal-infant bonding is based on the co-activation of motivational mechanisms indicative for stress, such as heightened vigilance and threat detection, and those associated with reward (Barrett & Fleming, 2011). Such stress and reward-related mechanisms must become integrated to form the parent–infant bond (Leckman et al, 2004).

Attachment develops in the context of the parent–infant relationship during the first months of life (Bowlby, 1969; Sroufe, 2005) through processes linking brain and behaviour. Underlying neural variations in motivation, vigilance, and the reward systems among typical mothers may be of theoretical and clinical importance for the study of healthy and at-risk parenting (Atzil, Hendler, & Feldman, 2011). Modern attachment theory posits that the hard wiring of the infant's developing right brain, which is dominant for the emotional sense of self, is influenced by implicit intersubjective affective transactions embedded in the attachment relationship with the mother. Developmental intersubjective studies conclude that implicit, non-conscious processing of nonverbal affective cues in infancy is repetitive and automatic, provides quick categorisation and decision-making, and operates outside the realm of focal

attention and verbalised experience (Schore & Newton, 2013). Using magnetoencephalography (MEG) in adults, Kringelbach and colleagues (2008) found a specific and rapid (within a seventh of a second) neural signature for parental instinct in a rapid-acting nonverbal realm of implicit relational knowledge. This allows the psychobiological attunement to the moment-to-moment implicit bodily-based affective communication of both mother and infant. Findings from fMRI studies show the effect of relational stress on the attachment system, leading to a significant decrease of activation in areas crucial to mentalization (Nolte, Guiney, Fonagy, Mayes, & Luyten, 2011). Furthermore, research findings confirm the impact of disorganized infant attachment behaviour and disrupted maternal communication (assessed in the SSP) in the first two years for amygdala development (Lyons-Ruth, Pechtel, Yoon, Anderson, & Teicher, 2016). This study also found left amygdala volume to be associated with dissociation and limbic irritability in adulthood. Finally, left amygdala volume mediated the prediction from attachment disturbance in infancy to limbic irritability in adulthood. This suggests that the quality of caretaking in the first two years of life may be an early sensitive period for amygdala development.

In Daniel Stern's work, 'intersubjectivity' is lifted to the level of attachment. He argues that intersubjectivity acts as 'a basic motivational system' (Stern, 2004). This is supported by recent findings from neuroscience. 'The birth of intersubjectivity', as described recently by Ammaniti & Gallese (2014), offers an affective and developmental (as much as a neurobiologically informed) model of the continuous and reciprocal interactions typical for parents and infants from their first days of life. They further Stern's concept of the intersubjective motivational system stating that, "Intersubjective processes are like a blueprint underneath every motivational system, and in the case of the attachment system, they are activated when attachment needs emerge" (Ammaniti & Gallese, 2014, p. 143).

Bowlby's (1988) thinking in relation to the cognitive aspects of attachment theory was based on an information-processing model in the cognitive sciences, superseded by more recent cognitive neurosciences in which mental functioning and brain/body are linked. In this new model, mental functioning is seen not as abstracted but as 'embodied' (Fonagy & Target, 2007). In this model, neurobiological events account for mental events, reminiscent of earlier psychoanalytic theories on the sensory and bodily aspects of the parent-infant interaction as shaping the infant's emerging 'sense of self' (Anzieu, 1989; Bion, 1962a, 1970; Bick, 1968; Freud's notion of a 'protective shield' Freud, (1920/2001); Winnicott, 1953; Stern, 1993, 1995). As Fonagy & Target (2007, p. 411) summarise, "Today, however, a second-generation cognitive neuroscience seeks neurobiologically plausible accounts in which links with brain and body are seen as

shaping mind and consciousness, which increasingly are seen as 'embodied', as emerging from or serving the needs of a physical being located in a specific time, place, and social context". This idea correlates with psychoanalytic thinking, which has affirmed the rootedness of the mind in sensory, emotional, and enacted experience with relational objects. The 'embodied' view from the field of neuroscience brings with it the promise of establishing a strong connection between attachment theory and psychoanalytic thought, particularly the origin of internal working models and of representations in early sensorimotor and emotional experiences with a caregiver (Emde, 2007). As noted by Fonagy and Target, the notion of 'embodiment' was anticipated by Mead's (1934) thinking on the social self, a pioneering work which is basic to today's notions of 'intersubjectivity' (Stern, 1985; Trevarthen, 1979). Recent discoveries from the cognitive neurosciences are integrating not only attachment theory and psychoanalysis, but also cognitive and social psychology and psychoanalysis, by creating a current neurobiology of intersubjectivity (Emde, 2007).

"Being, feeling, acting, and knowing describe different modalities of our bodily relations to the world" (Ammaniti & Gallese, 2014, p. 2). These modalities have a bodily root that is mapped onto specific ways of brain functioning and neural mechanisms. The discovery of 'mirror neurons' is a pivotal event in modern neuroscience (Gallese, Fadiga, Fogassi, & Rizzolatti, 1996; Rizzolatti, Fadiga, Gallese, & Fogassi, 1996; for an overview see: Ammaniti & Gallese, 2014). These 'mirror neurons', relevant for social cognition (Rizzolatti & Gallese, 1997), became significant in psychotherapy and psychoanalysis as they were hypothesised to account for the very existence and the development of 'empathy' and intersubjectivity from the first months of life (Ammaniti & Gallese, 2014). However, recent studies show that the mirror mechanism is highly activated, not so much in the first year of life, but in the second when the toddler starts walking and exploring the world on his own (Schore, 2014). As Schore states, "the mirror mechanism and motor cognition may be centrally involved in the toddler's and young child's imitation and observational learning and (...) thereby in early experiences of exploration and skill learning, especially in a social context" (Schore, 2014, p. xiii). The mirror mechanism may play a role in unconscious imitation and may account for the perception and production of mimicry of facial expressions, body postures and behaviours of social partners but "when observing someone else's facial expression, we do not understand its meaning only through explicit inference from analogy. The other's emotion is first and foremost constituted and directly understood by re-using part of the same neural circuits underpinning our first-person experience of the same emotion" (Ammaniti & Gallese, 2014, pp. 16 - 17). These findings parallel the right-brain-to-right-brain bodily-based affective communications described by Schore (1994,

2003, 2012).

Recent research on the emerging self claims that even some of the most minimal aspects of selfhood are fundamentally shaped by embodied interactions with other people in early infancy and beyond (Fotopoulou & Tsakiris, 2017). The research shows how physicality, and in particular physical interaction with others, is at the core of the formation of the self, and confirms the importance of embodied interactions for the building of mental models of the infant's physiological states, and of proximal interactions for the active mentalization of interoceptive states and therefore the corresponding core aspects of the minimal self (including sensation, interoception and affect). There is therefore a continuity between the minimal and the interactive, social self (Fotopoulou & Tsakiris, 2017). Furthermore, research found that interoception, the sensitivity to visceral sensations, plays an important role in homeostasis and guiding motivated behaviour. It is also considered to be fundamental to self-awareness, self-regulation and socio-emotional abilities (Maister, Tang, & Tsakiris, 2017).

The infants' brains learn to conceptualize interoceptive and other perceptual information within the parent-infant relationship in the service of self-regulation. The neural capacities for social functioning does not derive from inborn modules, but instead develops within social dyads while caregivers intentionally establish and support allostasis in the infant (Atzil & Barrett, 2017).

The idea of mentalizing homeostasis reaffirms the highly physical nature of the early relationship and physical touch as a form of communication (Fonagy & Campbell, 2017). Responsive physical interaction constituting the infant's first affirmation of their knowledge of the world as valid. Through the attunement to physical needs, the parent's touch affirms the reality and validity of the infant's bodily needs. This has powerful implications for the development of epistemic trust: trust in the caregiver to meet those needs, and also, trust in the infant's relationship with its own body (Fonagy & Campbell, 2017).

The differentiation of implicit and explicit processes and the focus on the brain-body connection stressing the importance of 'intercorporeality' in favour of symbolic representations seems crucial for a comprehensive understanding of the complexity of the parent-infant relationship and what it constitutes as it integrates early psychoanalytic theory and conceptualisation with recent neuroscientific research. Furthermore, this has potentially important clinical applications in relation to maternal postnatal depression, for example, and could provide various opportunities for early identification of families at risk.

The scope of cognitive neuroscience has been stretched well beyond the traditional

topics of visual perception, reasoning, memory and language, and therefore provides a wider basis of dialogue with psychoanalysis (Fotopoulou, 2010; Yovell, Solms, & Fotopoulou, 2015). Topics such as the neural correlates of attachment, emotions and mental conflict are nowadays considered mainstream areas of neuroscientific enquiry, and cognitive neuroscience focuses on the neurobiological basis of dynamically unconscious processes and their cognitive control (see Berlin, 2011; Fotopoulou, 2012 for reviews). Certain dissociations between explicit (conscious) and implicit (unconscious) processes in neuropsychology (Fotopoulou, Pernigo, Maeda, Rudd, & Kopelman, 2010; Nardone, Ward, Fotopoulou, & Turnbull, 2007) are understood as the neurodynamic equivalents of psychodynamic repression processes (Fotopoulou, 2010; Yovell et al., 2015).

However, as these “neuroscientific fields are in their infancy, their use of complex psychological concepts and their epistemological assumptions are frequently dominated by errors of oversimplification, reductionism, localizationism, atheoretical use of terms, and other fallacies. The dialogue and interdisciplinary exchange with fields such as social psychology, philosophy and psychoanalysis, with their rich theoretical and epistemological traditions, and their emphasis on first-person levels of explanation, may have constraining effects over such neuroscientific errors” (Fotopoulou, 2010; Yovell et al., 2015, p. 1520).

To the best of the author’s knowledge, Blass and Carmeli (2007; 2015; 2016) have put forward the most extensive critique of neuropsychology in the psychoanalytic literature to date. They claim that neuroscience has no contribution to psychoanalytic theory and practice, despite the existence of obvious and proven ties between brain and mind (Blass & Carmeli, 2016). Moreover, they claim that Yovell, Solms, and Fotopoulou’s paper only confirms their position on the irrelevance and harmfulness to psychoanalysis of the contemporary neuroscientific trend, and how this trend perverts the essential nature of psychoanalysis and of how it is practiced (Blass & Carmeli, 2015). This ongoing debate could be critical to future perceptions of psychoanalytic theory and treatment, in particular as it may reflect the highly controversial discussion within the healthcare system regarding relevance and outcome of psychoanalytic treatment compared to cognitive behavioural therapy, specifically in early intervention.

Research on the effects of parenting interventions, which aimed at remediating or preventing problems in children typically prove only moderately effective due to substantial heterogeneity in their efficacy (Belsky & van IJzendoorn, 2017). Studying the gene-environment interaction of diverse aspects of child development and health found that some individuals may be more vulnerable to adversity than others (Belsky, 2016; Van IJzendoorn & Bakermans-Kranenburg, 2015). The impact of some personal

attributes (that could be genetic, physiologic, and/or behavioral) results in the fact that some children are more likely than others to succumb to the negative effects of problematic environmental conditions (eg, poverty, malnutrition, or pathogen exposure) (Belsky, 2016; Belsky & Pluess, 2009; Ellis, Boyce, Belsky, Bakermans-Kranenburg, & van IJzendoorn, 2011). Recent research on the genetic differential susceptibility to the effects of parenting found evidence that, due to their genetic make-up, some children benefit more from interventions targeting parenting than do others (Belsky & van IJzendoorn, 2017). This confirms clinical observations indicating that children most negatively affected by adverse experiences also benefit the most from supportive intervention.

In summary, this section on Neuropsychology, Neuropsychoanalysis and Neuroscience and their impact on psychoanalytic theory of the parent-infant relationship is of particular clinical interest, as this research seems in line to prior psychoanalytic theories, empirical findings and clinical observations previously mentioned in this chapter. The neuroscientific findings confirm that neurobiological events account for mental events, reminiscent of earlier psychoanalytic theories on the sensory and bodily aspects of the parent-infant interaction as shaping the infant's emerging 'sense of self'. In this understanding mental functioning is seen not as abstracted but as 'embodied' (Fonagy & Target, 2007) and the brain-body connection stressing the importance of 'intercorporeality' in favour of symbolic representations seems crucial for a comprehensive understanding of the complexity of the parent-infant relationship.

Therefore, the systematic and standardized observation of the parent-infant interaction offers an opportunity to observe the ongoing interactional process shaping not only the quality of the parent-infant relationship but the infant's capacities to relate, create, differentiate and develop a 'sense of being with one another'. Particularly observational measures grounded in psychoanalytic thinking on the emerging parent-infant relationship, such as PIRAT Global Scales, are important to capture the subtleties of the parent-infant interaction and its relation to psychoanalytic theories, empirical findings and clinical observations. Hence, the reliability and validity of such a new observational measure needs to be evaluated thoroughly.

1.6. Summary

In conclusion, the early caregiving relationship, especially the quality of infants' interactions with their parents is critical for biological, cognitive, emotional and social development (Bornstein, 1985; Bornstein, Suwalsky, & Breakstone, 2012; Feldman, Weller, Zagoory-Sharon & Levine, 2007; Fonagy & Target, 2002; Hofer, 2006; Kim, Mayes, Feldman, Leckman, & Swain, 2013).

This emphasis on the right brain systems that underlie attachment and developmental change has found resonance with psychoanalytic understanding and clinical models of psychotherapeutic change. In order to assess any infant-mother system of attachment communications, the clinician must not only be aware of, but enter into, the rapid-acting nonverbal realm of implicit relational knowledge which is essential in the evaluation of the development of a young child under five years. In applying regulation theory to the clinical evaluation of the mother-infant relationship, the assessment process is as important as the assessment technique (Schoore & Newton, 2013).

Today, attachment theory and its scientific validation from neuropsychology, neuropsychanalysis and neurosciences not only feed into early intervention, such as parent-infant psychotherapy but into psychoanalytic theory, method and psychotherapy research (Schoore & Schoore, 2008). The unique contribution of regulation theory's integration of biological and psychological domains will support the development of more effective models of early assessment, intervention and prevention. Since recent research on the infant brain suggests that therapeutic intervention is most likely to be effective when there is maximum neural plasticity and a still fluid set of relationships to influence (Feldman, 2015, 2016; Schoore, 2001), appropriate interventions, such as relationship-focused early intervention programmes and psychodynamic parent-infant psychotherapy, are best accessed at the earliest opportunity (Broughton, 2014; Feldman, 2016; Granqvist et al., 2017; Slade et al., 2017; Tereno et al, 2016). The rationale for early intervention creates a need for methods and measures to observe and analyse parent-infant interactions and assess the overall quality of the parent-infant relationship (Sleed, 2013).

To date, the theoretical landscape has centred around the dyadic mother-infant relationship and has been primarily concerned with maternal aspects impacting the emerging relationship. It is imperative therefore that future understanding of the early relationship should also focus on the third person, such as the father or other partner or caregiver, and their impact on the early relationship but the predominance of maternal

over paternal influences on the baby in theory and research will be considered in the final discussion.

Key implications for a new observational measure focus on the dyadic parent-infant interaction and infant's and parent's contribution to the developing relationship.

Focusing on the dyadic parent-infant relationship a new measure should therefore not only provide a systematic and standardized observation of the relational quality but also capture a range of essential qualities and behaviours described by psychoanalytic theories and empirical research. Given the rich theoretical background revisited in this chapter such a measure should provide observations of relevant infant, parent and dyadic parent-infant contributions to the overall quality of the parent-infant relationship, such as:

Parental Behaviours:

- gaze, eye contact, warm affective tone and modulation of the parental voice (known as 'motherese')
- parental physical contact, closeness, handling and positioning of infant
- sensitivity, emotional attentiveness and responsiveness, reflective functioning
- joint attention, stimulation, teaching, directiveness, demandingness, structuring and controlling behaviours during interaction and play
- marked 'mirroring' and affect regulation of infants affect (containment of primary affects, arousal and negative feeling states)
- affect attunement, misattunement, and re-attunement the parent's ability to repair dyadic miscoordination (balance between 'mismatch' and 'repair')
- predictability of parent's response
- indicators of risk in themselves and therefore of importance when assessing the quality of the parent-infant relationship: extremely insensitive, aggressive and intrusive maternal behaviours, and parental representations, negative, age inappropriate and 'distorted' representations, withdrawal or role-reversal, disrupted interactions without repair, intrusiveness, sexualized behaviour, dissociation, hostile/helpless and frightening/frightened states

Infant Behaviours:

- gaze or eye contact, vocalisation, talk
- attentiveness, responsiveness, cooperativity, reactivity and contingency, readiness to interact
- emotional contact and closeness
- physical contact and closeness

- mastery of anxiety, fear and loss in the infant when separated or reunited (e.g. seeking of contact, clinging, avoidance)
- ability to be soothed and to be able to resume exploration and play
- reaction and contact to a stranger
- aggressive behaviour
- specific behaviours indicating risk, such as overly passive, 'compulsive-compliant' (inhibited aggressive or fearful) behaviour or frightened behaviours, avoidance, clinging, freezing, stilling, dissociation and disorganized behaviours, in particular avoidance coupled with expressions of strong distress, undirected, misdirected, incomplete or interrupted movements or expressions, asymmetrical movements, mistimed movements, anomalous postures, and slowed movement

Dyadic Quality of the Parent-Infant Interaction

- 'patterns of mutual regulation' between mother and infant and synchrony of the interaction, such as the coordination of non-verbal behaviours (gaze, affect, vocalisations, body movements and indicators of arousal) attuned to one another through non-verbal and verbal communication
- mutual influence of both the parent's and the infant's actions regulate those of the other
- sensory and bodily aspects of the parent-infant interaction, such as the infant's body image, physical contact, closeness, touch

The following chapter comprises a review of measures assessing the quality of the parent-infant relationship, and offers an overview of how widely used and validated observational measures assess the parent-infant relationship.

2. Evaluation of the Parent-Infant Relationship: Measures and Assessment Methods

2.1. Introduction

Early Head Start (Early Head Start National Resource Center, 2013) and comparable paediatric initiatives (Committee on Psychosocial Aspects of Child Family Health, 1997; Hagan, Shaw, & Duncan, 2008) recommend the routine observation of the parent-infant interaction in clinical work, early intervention, and research, stating that the “child’s relationship and interactions with his or her caregiver should form the cornerstone of the assessment” (Early Head Start National Resource Center, 2013, p. 6). These recommendations have been informed by research that indicates that the quality of the parent-infant relationship is crucial for the infant’s developmental outcome, as shown in Chapter 1.

The logical means by which to assess the quality of the parent-infant relationship is through the observation of the parent-infant interaction and the use of observational measures. Unfortunately, observational tools involve significantly more investment in training, technical equipment and administrative time than is required by self-report questionnaires (Bagner, Rodríguez, Blake, Linares, & Carter, 2012). Parental self-report questionnaires are not only preferred when general information about the parent–infant interaction is required, as they are brief, easy to administer and evaluate and are often available online, but they may also be used as the sole means to assess the relational quality. Self-report questionnaires might be helpful in identifying parents and infants who require more extensive assessment (Halle, Vick Whittaker, & Anderson, 2010) or in order to assess the parent’s feelings, thoughts, or perceived relationship quality with their infant (Gardner, 2000; Lotzin, 2015). However, as self-reports are usually biased by the parent’s linguistic skills, thoughts, feelings, or tendency to respond in a socially desirable manner (Corcoran & Fischer, 2013), and cannot adequately capture the subtle signs and dynamics of the mutual parent-infant interaction, they are suggested for use as an additional, but not sole, assessment of the parent-infant relationship (Forman, Aronson, & Combs, 2003).

The observational assessment of the quality of early parent-infant interaction is therefore essential for our theoretical understanding of early relational experiences, attachment and developmental psychopathology. Assessment tools can be applied in clinical and early intervention settings in various ways, e.g. in preventative screening for problems which may warrant referrals for clinical interventions, for informing in-depth parenting assessments for family courts, in helping clinicians to inform their

formulations and techniques in working with parents and babies, and in the evaluation of treatment outcomes for parent-infant interventions (Sleed, 2013). Observation of the actual parent-infant interaction is the most objective way to assess relational quality and offers insight into the ways in which disruptions in the parent-infant relationship develop, whether they are repaired or maintained, leading to ongoing mis-attunement in the relationship with the consequences outlined in the previous chapter.

There is one book (DeCarmen-Wiggins & Carter, 2004) and several reviews of measures assessing the parent-infant interaction (e.g., Bagner et al., 2012; Halle, Anderson, Blasberg, Chrisler, & Simkin, 2011; Lotzin et al., 2015; Munson & Odom, 1996). Notably, comprehensive systematic reviews of the psychometric properties of observational tools assessing the parent-infant interaction and their clinical relevance are rare (Lotzin et al., 2015). Only one review focused on assessment in the context of early intervention (Kelly & Barnard, 2000) and only a few focused on assessment in psychoanalytic parent-infant psychotherapy (Sleed, 2013; Sleed & Bland, 2007; Sleed & Fonagy, 2010).

This chapter reviews the methods and measures which have been developed in order to assess the early parent-infant relationship, particularly with respect to assessing risk factors for relational trauma and developmental psychopathology. As such, this overview is limited to measures that originate from a clinical background and are tested for reliability and validity, offering a qualitative view on maternal sensitivity/extreme insensitivity and interactional behaviours, which indicate the development of either secure or disorganized attachment patterns. It seems appropriate that assessment tools used by health professionals working with parents and infants should focus on parents' and infants' effect on the relationship, and the dyadic parent-infant relationship as the interaction unfolds. The tools should capture the overall quality of the relationship as well as parental, infant, and interactional behaviours indicating resilience and risk. Ideally such measures would be suitable for use in a variety of settings, such as 'live' or videotaped observation of non- or semi-structured interactions at play, with or without toys, and in the consulting room or home environment.

This overview therefore includes quantitative measures, designed for observation of the interaction between a parent (mostly the mother) and an infant by an external observer, assessing parent and infant behaviour as well as the dyadic relational quality. The overview is limited to reliable and valid measures which can be applied from 0 – 24 months of the infant's age as any difficulties in the parent–infant interaction should be identified as early as possible, and prior to the formation of an attachment

pattern (Early Head Start National Resource Center, 2013). In addition to the psychometric properties of such measures the practical arguments for or against the choice of a tool, such as the amount of time needed to train and become reliable, the time to conduct and evaluate the assessment, the training availability and cost, and its clinical use are all considered. Since training availability for clinicians (not only researchers), time-efficiency of training and reliability testing as well as of the evaluation of the assessment are crucial for the clinical applicability of observational measures, this overview provides information on training, time and cost and a summary on its suitability for clinical use. This summary of accessibility and efficiency of each observational measure might seem impressionistic, as the specifics of training accessibility, reliability training procedures and thresholds for reliability testing, training costs, time for administration and evaluation of observational measures are rarely described in detail in either the coding manual or published papers. Therefore, these comments are mostly based on either the present author's correspondence with the author(s) of the measure, extensive discussions with colleagues who trained on these measures and their experiences using them in clinical work and research, or the present author's own experience when training on particular measures.

In looking at the range of studies and measures of parent-infant interactive behaviour, it would appear that the majority focus on parental sensitivity, or the absence of sensitive behaviour, as key constructs. There is some variation across measures as to how to assess sensitivity, but there seems little doubt that sensitivity is key to assessing the quality of interactive behaviour. The research outlined in Chapter 1 found that interactional exchanges over time between mother and infant, characterised by the mother's emotional sensitivity and responsiveness, predicted the infant's attachment security (Emde, 2000). The close observation of infant behaviour and the subsequent parental responsiveness to it is therefore crucial in understanding individual differences within the quality of parent-baby relationships. Clearly, this raises several questions about the importance of sensitivity. Firstly, whether the absence of sensitivity could be considered traumatic and therefore a severe risk? And secondly, if its presence provides any kind of protection against traumatic experiences that impinge on, and occur within the parent-infant relationship?

In addition to sensitivity as a core construct, there are many other aspects of parent-infant interactions that are commonly used in coding systems. De Wolff and van IJzendoorn (1997) undertook a comprehensive survey of 55 constructs of parenting behaviour used by experts in attachment research. They identified nine conceptual groups.

1. Sensitivity: the ability to perceive the infant's signals accurately and to respond to these signals promptly and appropriately.
2. Contiguity of Response (also referred to as responsiveness): the age-appropriate promptness and frequency of response to the infant's signals (rather than a qualitative assessment of the type of response as detected by sensitivity).
3. Physical Contact: both the quantity and quality of physical touch.
4. Cooperation: presence or absence of positive cooperation, intrusive or interfering maternal behaviour.
5. Synchrony: the extent to which interaction appears to be reciprocal, mutually rewarding and well-timed.
6. Mutuality: mutual positive exchanges, joint attention, modulation of the baby's arousal, and parental responsiveness to infant cues. It also refers to the infant's expression of positive affect, non-avoidance, active maintenance of the interaction and eye contact.
7. Emotional Support: the mother's attentiveness and availability to the child and support given. It involves making the child feel comfortable and secure in addition to being involved and attentive to the child and joint tasks.
8. Positive Attitude: This construct includes the mother's expression of positive and negative affect to the baby and the degree to which mother and infant engage in reciprocal interactions.
9. Stimulation: parental actions and behaviours directed towards the baby.

In addition to sensitivity, the most commonly measured features of the interactions are the affective quality of the interaction (positive affect or lack of positive affect), cooperation, and the extent to which the parent provides emotional support for the child during the interaction.

De Wolff and van IJzendoorn (1997) confirmed the predictive impact of maternal sensitivity assessed in the first year and infant attachment security assessed in the second year. The effect they found for maternal sensitivity was only moderately high, as it was for other clusters of parenting behaviours. In examining existing research on parent-infant interactive behaviour, particularly those focusing on the concept of maternal sensitivity, it is striking how many of the studies were conducted on middle-class, low-risk samples. They mostly comprise of interactional features of normative relationships between parents and infants, which facilitate secure attachment and healthy infant social and emotional development. However, in their meta-analytic review, De Wolff & van IJzendoorn, (1997) found that the link between maternal behaviour and infant attachment is less robust in clinical and lower class samples. In

fact, more recent studies carried out on high-risk samples have not found a strong association between maternal sensitivity and infant attachment (McMahan True et al., 2001; Ward & Carlson, 1995; Ziv, Aviezer, Gini, Sagi, & Koren-Karie, 2000).

Although maternal insensitivity shows some association with attachment insecurity, again, especially in low risk samples, insensitivity in itself may not be a sufficient indicator of risk for an insecure attachment development. The disorganized attachment classification (Main & Solomon, 1986) has enabled researchers to identify a group of infants most at risk. The high prevalence of disorganized attachment in maltreated children has emphasised the limitations of the original secure-insecure classification system, as many of these children were not identified as being at risk before (Carlson, Cicchetti, Barnett, & Braunwald, 1989). This is of significant clinical relevance as disorganized attachment has been found to be strongly predictive of later psychopathology (Berry, Barrowclough, & Wearden, 2007; Carlson, 1998; Kobak et al., 2006; Lyons-Ruth & Jacobvitz, 2008; Sroufe et al., 2005), far more so than the two organized but insecure attachment strategies originally defined by Ainsworth and colleagues. This seems to be particularly important when reviewing the impressive body of research studies employing well-established and validated measures with sensitivity/insensitivity as a core concept.

2.2. Measures Focused on Maternal Sensitivity

A variety of measures have been developed to evaluate the quality of the parent-infant relationship, focusing on the concept of maternal sensitivity. Maternal sensitivity is conceptualised as a mother's accuracy in perceiving and interpreting her infant's cues and her ability to react to their signals in a timely, appropriate and well attuned manner (Ainsworth et al., 1974). Maternal sensitivity was initially observed using 'The Sensitivity Scale' (Ainsworth, 1969), a single 9-point Likert Scale rating maternal sensitivity and contingency of response. Mary Ainsworth and her colleagues were amongst the first to devise standardised rating scales on the quality of interaction between parents and infants, based on intensive home observations of interaction between parents and infants during the first year of the children's lives (Ainsworth et al., 1974, 1978).

The Sensitivity Scale solely focuses on maternal sensitivity and does not take into account the infant's interactional behaviours, or the dyadic quality of the interaction. The scale is accompanied by neither a detailed manual, including the exact operationalisation of each level of sensitivity, nor a reliability training. As a result, there appears to be a broad interpretation as to what sensitivity is, and a focus on responsiveness to the infant's signals rather than the original description. Ainsworth and her colleagues sought to identify maternal behaviours that facilitated secure base behaviour and attachment security in infants. They outlined four key aspects: sensitivity versus insensitivity, cooperation versus interference, psychological and physical availability, and acceptance versus a rejection of the infant's needs. Sensitivity was considered to be the most important aspect of parental behaviour as high levels of sensitivity were linked with cooperation, availability and acceptance, and to the infant's security of attachment (Meins, 1999).

A range of other scales have been developed which maintain maternal sensitivity as their central construct but take a more detailed approach, such as the:

2.2.1. Parent-Child Relational Assessment (PCERA; Clark, 1985).

2.2.2. Coding Interactive Behaviour Scale (CIB; Feldman, 1998).

2.2.3. Emotional Availability Scales (EAS; Biringen, Robinson, & Emde, 1993, 2000, 2008).

2.2.4. Child Adult Relationship Index (CARE-Index; Crittenden, 2001, 2005).

2.2.5. Parent-Infant Interaction Observation Screen (PIIOS; Svanberg, Barlow & Tigbe, 2013).

These measures included other parental variables and a variety of child and dyadic

interactive behaviours. For an overview comparing the properties of the measures see Tables 2.1. and 2.2.

Table 2.1. Measures focused on maternal sensitivity – Part 1

| Measure | Author/s | Age | Setting | Parent | Infant | Dyadic | Psychometric |
|--|---|--|---|--|---|---|--|
| Parent-Child Early Relational Assessment (PCERA) | Clark, 1985 | 2 – 62 mths | 5 min. observation of several tasks, incl. free play, videotaped, un-structured | Positive affective involvement & verbalization; Negative affect & behaviour; Intrusiveness, Insensitivity, Inconsistency | Positive affect & Social communicative skills; Quality of play, Interest & Attentional skills; Dysregulation & Irritability | Mutual enjoyment & reciprocity; Disorganization & tension | 65 items: 29 parent 28 child 8 dyadic, scored on a 5-point Likert Scale with anchor points |
| Emotional Availability Scales (EAS) – Infancy to early childhood version | Biringen et al., 1993; Biringen, 2000; 2008 | 0 – 48 mths | 20 min recommended, direct and/or videotaped, unstructured home to highly structured lab settings | Sensitivity, structuring, non-intrusiveness, non-hostility | Involvement, responsiveness | none | 4 Parental dimensions (5-point Likert-Scales, Sensitivity 9-point Scale), 2 Child Scales (7-point Scale) |
| Coding Interactive Behavior (CIB) | Feldman, 1998 | 2 – 36 mths, New-born version 0 – 2 mths | Videotaped (several times of viewing required for coding) | sensitivity, intrusiveness, parent limit-setting (for children > 12 months) | social involvement, negative emotionality, child compliance (for children > 12 months) | dyadic reciprocity, dyadic negative states | 43 + 2 items, 22 parent, 16 child, 5 dyadic, scored on a 5-point Likert Scale with anchor points |

Table 2.1. Measures focused on maternal sensitivity – Part 2

| Measure | Author/s | Age | Setting | Parent | Infant | Dyadic | Psychometric |
|---|--------------------------------|--|---|--|--|---|---|
| Child Adult Relationship Index (CARE-Index), Infant version | Crittenden, 2001 | 0 – 15 mths | 3-5 min., videotaped, home, clinic, lab – not reliable for „live“ observations, but can be used in that way as well | sensitive, controlling, unresponsive | cooperative, difficult, compulsive and passive | facial and vocal expression, position & body contact, expression of affection, turn-taking, control, choice of activity – all of them coded for parent and for infant | 7 Scales: 3 parent, 4 infant, 7 dyadic, scored on a 14-point Likert Scale indicating Sensitivity (low 1-14 high) |
| Parent-Infant Interaction Observation Screen (PIIOS) | Svanberg, Barlow & Tigbe, 2013 | 0 – 6 mths (at least validity and IRR are limited to that age) | 3-4 min., videotaped, home, clinic, lab, not reliable for „live“ observations, but can be used in that way as well | infant positioning, warmth and affection, holding and handling, verbal commenting on the baby (mind-mindedness), attunement to distress, intrusiveness (“looming in”), expressed expectations about baby, empathic understanding | baby’s self-soothing strategies | eye contact, vocalizations, affective engagement and synchrony, bodily responsive turn-taking – all of them coded with focus on parent’s sensitivity to infant’s cues | 13 Scales: 8 parent, 1 infant, 4 dyadic, scored on a 14-point Likert Scale indicating Sensitivity (low 1-14 high) |

For an overview of the purpose and context for which the scales were developed, their time- and cost-efficiency, specifics of training and reliability training see table 2.2.:

Table 2.2. Measures focused on maternal sensitivity – specifics of usability and training

| Measure | Developed for use in the context of: | Time | Training | Reliability Training | Reliability re-testing | Cost | Applicable for |
|---|---|---|---|--|--|--|--|
| Parent-Child Early Relational Assessment (PCERA) | Research, but widely used in clinical work and research | 1 hour for 1 task, such as free play | Onsite, 3 days (40h), Wisconsin, 3 certified trainers offer trainings around the world, rel. test offsite | Reliability test: 8 videos during training at IRR \geq .85, 4 videos after training at \geq .80 or \geq .90 within one scale point | None | USD 1.200 in US, PCERA Manual 50 USD | Researchers, clinicians and healthcare workers, nurses, midwives, social workers, GPs, occupational therapists with clinical experience, if fully trained and reliable |
| Emotional Availability Scales (EAS) | Research, can be used for clinical work | 1 hour | Onsite or e-learning, 3 days, rel. test offsite | Offsite, 20 clips IRR \geq 80 % | None | £ 595 per lab | Researchers and clinicians |
| Coding Interactive Behavior (CIB) | Research, can be used for clinical work | 1 hour | Onsite 2 days, in the US at Yale University and reliab. test offsite | Offsite, 20 clips, IRR \geq 85% on all codes | none | USD 1.500 | Researchers |
| Child Adult Relationship Index (CARE-Index), Infant version | Research, but applicable to „live“ observation in clinic and home | 1 hour down to 30 min., if very experienced rater | Onsite, Certified trainers, 10-12 days, rel. test offsite | Onsite, pre-test: 7 clips, Offsite rel. test: 15 clips research IRR \geq .85 and .80 for specific scales, screening IRR \geq .70 | Research: after 1 year, 15 Clips, IRR \geq .80 | £ 1.400, re-test cost depends on lab and country | Researchers, if used for 'live' observation as well for: nurses, infant teachers, clinicians, and social workers |
| Parent-Infant Interaction Observation Screen PIIOS | Screening | 1 hour down to 30 min., if very experienced rater | Onsite, Certified trainers, 3 days, rel. test offsite | Offsite rel. test: 15 clips at .80 % agreement | none | £ 450 | Health visitors and other professionals screening for risk |

Properties and usability of the measures listed in the tables above will be further described in the next sections of this chapter.

2.2.1. Parent-Child Relational Assessment (PCERA)

The Parent-Child Early Relational Assessment (PCERA; Clark, 1985) is one of the most widely used tools for assessing interactions between parents and infants having been used in over two hundred projects internationally (Clark, 1999). The content of the assessment was informed by psychodynamic, self-psychology, attachment, developmental and soviet cognitive-linguistic theories, as well as by empirical studies and clinical observations (Clark, 1999). The tool was initially developed to describe interaction patterns and inform intervention strategies within a clinical sample (Musick, Clark, & Cohler, 1981) and can be applied as a clinical and outcome tool for both clinical and normative populations.

Content and Procedure:

The interaction between the parent and infant is observed and videotaped during 5 minute sequences of feeding, structured task, free play and separation-reunion. It is possible to select only one, or several contexts that might be most relevant for each user. Segments are rated on 65 (29 parent, 28 child, and 8 dyadic) behavioural and affective variables on 5-point Likert scales with behavioural anchors. The instrument is designed to pick up on both positive and negative behaviours and affective states, see Table 2.1..

Psychometric properties:

The extensive use of the PCERA has resulted in a substantial amount of data about its psychometric properties. The internal consistency was tested in several studies with good results, such as $\alpha = .78 - .91$ (Clark, 1999), $\alpha = .83 - .93$ (Grych & Clark, 1999), $\alpha = .84 - .91$ (Pridham, Brown, Shondel, Clark, & Green, 2001), $\alpha = .61 - .96$. (Faugli, Aamodt, Bjørnland, Emblem, & Diseth, 2005). The inter-rater reliability (IRR) was reported as 83% to 97% (Poehlmann et al., 2011), 93% (Burns, Chethik, Burns, & Clark, 1991), ICC = .99 (Bystrova et al., 2009). The concurrent construct validity of PCERA subscales have also been demonstrated with significant relationships to a number of constructs such as, among others, infant attachment (Teti, Gelfand, Messinger, & Isabella, 1991) and internal working models (Eiden, Teti, & Corns, 1995).

The criterion validity has been established through a number of studies comparing different high-risk populations such as adolescent mothers (Clark, 1999), mothers with psychiatric diagnoses versus those without (Clark, Paulson, & Conlin, 1993), depressed mothers (Korja et al., 2008; Pridham et al., 2001) as well as premature infants (Pridham et al., 2001), infants with failure to thrive (Black, Dubowitz, Hutcheson,

Berenson-Howard, & Starr, 1995), infants with esophageal atresia (Faugli et al., 2005), African American mothers and their children with nonorganic failure to thrive compared to those with children with adequate growth (Black et al., 1995) and low-income families (Clark et al., 1993). Sensitivity to change following therapeutic intervention has been demonstrated in several studies (e.g., Clark et al., 1993; Minde, Faucon, & Falkner, 1994).

Training, time and cost:

Clinical experience and training are required to reliably use the PCERA, particularly when it is being used as a research tool (Clark et al., 1993). The actual scoring of the interactions can be complex and time-consuming (Crowell & Fleischmann, 1993) as it usually takes about one hour to rate one segment.

Training is provided by a group of trainers who have high levels of inter-rater reliability and have experience of using the measure across a broad age span of infants and young children as well as with culturally diverse, high risk and well-functioning parent populations (Sleed, 2010). Training can be provided on-site and tailored to the particular needs of the trainees. The cost for training in 2015 was USD 1,250 (Roseanne Clark, personal communication).

Summary:

The PCERA brings together a very wide range of parent, infant and dyadic behaviours as well as theoretical underpinnings. In many ways it is comparable to the Coding Interactive Behavior system (CIB; Feldman, 1998) with some overlap in the codes between the two. The broad range of theories and observations upon which it is based makes the PCERA a suitable tool for evaluating a wide range of interactional characteristics whereas the more time-consuming one hour per task coding makes it often too complex and lengthy for clinical use.

2.2.2. Coding Interactive Behaviour Scale (CIB)

The Coding Interactive Behavior Scale (CIB; Feldman, 1998) has been widely used for research (Feldman, 2012). The instrument was initially developed to describe interaction patterns of parents and infants but can be used to observe interacting dyads or triads from infancy to adolescence (Feldman, 2007b), with a further version available for interactions between romantic partners.

Content and Procedure:

The interaction between the parent and infant is observed and videotaped in 'free play' interaction. The coding system contains 45 rating scales, 22 of which address the adult's behaviour, 16 evaluate the child's behaviour, 5 are dyadic codes and two are overall codes. The codes are aggregated into several theoretically based constructs. Additional codes are available when the context is not that of free play, such as feeding, caregiving, cognitive problem-solving tasks or book reading. A separate coding scheme is used when more than two people are interacting, typically a family, and this scheme evaluates the functioning of the family as a single unit. The behavioural and affective codes are rated on a 5-point scale. The coding system is designed to identify both positive and negative behaviours and affective states, see Table 2.1.

Psychometric properties:

The internal consistency was tested in several studies with good results. In every sample studied to date, the same codes aggregated into the same higher-order constructs with adequate internal consistency. This was found across ages and in samples from different cultures (Feldman, 2012). A study on parent-infant psychotherapy computed three new subscales based on a factor analysis: 'Dyadic Attunement', 'Parental Positive Engagement' and 'Child Involvement'. Their internal consistency was reported as: 'Dyadic Attunement' ($\alpha = 0.905$), 'Parent Positive Engagement' ($\alpha = 0.957$), and 'Child Involvement' ($\alpha = 0.961$) (Sleed, Baradon, & Fonagy, 2013).

The inter-rater reliability was calculated in several studies as 92% (kappa = .84, range = .78 - .91) in feeding interactions of premature and mature babies (Silberstein, Feldmann, Karmel, Kuint, & Geva, 2009), 93% (kappa = .80) (Feldmann, Weller, Sirota, & Eidelmann, 2003), 94% (kappa = .82) (Feldmann & Eidelmann, 2005), ICC = .92 (range 0.85 - 0.97) (Feldmann, Keren, Gross-Roszval, & Tyano 2004), ICC = .92 (range .85 -.97) (Feldmann & Klein, 2003). Two studies tested the inter-rater reliability on several CIB scales for mothers and fathers (ICC from .71 - .89) (Feldmann et al., 2003) and play (ICC = .91) and feeding (ICC = .92) interactions (Keren, Feldman, & Tyano, 2001).

The system has been validated in numerous studies of healthy and at-risk infants and has shown criterion validity related to parent gender, age of the child, cultural background and biological and social-emotional risk conditions (Feldman, 2000, 2012; Feldman, Eidelman, Sirota, & Weller, 2002; Feldman, Greenbaum, Mayes, & Erlich, 1997; Feldman, Masalha, & Nadam, 2001; Keren et al., 2001). The CIB is well

validated and has been shown to have good concurrent and discriminant validity as well as sensitivity to treatment change (Feldman & Eidelman, 2003; Feldman, Eidelman, & Rotenberg, 2004; Feldman et al., 2002; Ferber & Feldman, 2005; Ferber et al., 2005).

The validity of the CIB constructs has been tested and the CIB 'Reciprocity' construct correlates with synchrony assessed by microanalytic coding (Moshe & Feldman, 2006; Harel, 2006) and CIB 'Synchrony' (Feldman, 2012). In addition, correlations were found between withdrawal behaviour assessed with the Alarm Distress Baby Scale (Guedeney & Fermanian, 2001) and the CIB constructs of 'Child involvement and withdrawal' (Dollberg, Feldman, Keren, & Guedeney, 2006).

The criterion validity has been established through a number of studies comparing different populations, such as maternal cocaine use (Mayes et al., 1997), delivery pain (Ferber & Feldman, 2005), and infant prematurity (Keren, Feldman, Eidelman, Sirota, & Lester, 2003).

Sensitivity to change following intervention has been demonstrated in studies of Kangaroo Care (Feldman et al., 2003) and massage therapy (Ferber et al., 2005) for pre-term infants.

Training, time and cost:

Clinical experience and training are required to reliably use the CIB coding system (Feldman, 2012). The actual scoring of the interactions can be complex and time-consuming (Feldman, 2012) as it usually takes about one hour. Training is provided by a group of trainers who are experienced in using the measure across a broad age span of infants and young children as well as with culturally diverse, high risk and well-functioning parent populations and is open to researchers (Feldman, 2012). The cost for training in 2016 was USD 1,200 (Ruth Feldman, personal communication).

Summary:

The CIB brings together a very broad range of parent, infant and dyadic behaviours as well as theoretical underpinnings, in some ways comparable to the PCERA. The broad range of theories and observations upon which it is based makes the CIB a suitable instrument for evaluating a wide range of interactional characteristics across the age range. Unfortunately, it is designed for, and used in, research contexts and is therefore too complex and lengthy for clinical use.

2.2.3. Emotional Availability Scales (EAS)

The Emotional Availability Scales (EAS; Biringen, Robinson, & Emde, 1993, 1998, 2000, 2008; Biringen & Robinson, 1991) were designed to assess the quality of dyadic interaction between a child (0–14 years) and caregiver, focusing on the level of 'Emotional Availability' (EA) (Emde, 1980, 1983, 2000; Mahler et al., 1975).

Content and Procedure:

'Emotional Availability' (EA) theory is based on Bowlby (1969/1980, 1973) and Ainsworth's (Ainsworth et al., 1978) conceptualisation of maternal sensitivity as well as Emde's work on emotion as a 'sensitive barometer' of the relationship between a parent and a child (Emde & Easterbrooks, 1985). Another major influence on the concept of EA is systemic theory (e.g., Guttman, 1991), which defines relationships as units and views each member of the family as profoundly affecting each other family member's behaviours (Biringen & Easterbrooks, 2012). EA is a relational construct comprising of elements such as emotional expression and responsiveness, as well as openness, warmth and emotional attunement. This is characterised by the caregiver's emotional signals, the child's emotional signals, and the caregiver's ability to identify and accurately interpret the child's emotional experience (Biringen, 2008). A 20–30 minute video clip of a parent-infant interaction is recommended as a minimum. The EA Scales consist of a sum score and six subscales, such as parental 'Sensitivity', 'Structuring' 'Non-intrusive', 'Non-hostile' and 'Child Involving and 'Child Responsive' (Biringen, 2008). Maternal 'Sensitivity' assesses the mother's acceptance, flexibility, affect regulation, conflict resolution, and variety and creativity in play displayed with the infant. 'Structuring' assesses the degree to which the mother appropriately scaffolds, facilitates, organizes, and maintains child play, exploration, or routine by providing rules and a supportive framework for interaction without compromising the child's autonomy. 'Non-intrusiveness' measures mother support for the infant without interrupting the infant by being overdirective, overstimulating, overprotecting, and/or interfering. 'Non-hostility' measures speech or behaviour directed to the infant in a way that is patient, pleasant, and harmonious and not rejecting, abrasive, or antagonistic. 'Involvement' assesses the infant's ability and willingness to engage the mother in interaction. Infant 'Responsiveness' focuses on the infant's age- and context-appropriate balance between autonomous exploration and social reactions to mother as well as the infant's enjoyment of the interaction. The scoring structure of each subscale is as follows: maternal sensitivity ranges from 1 'highly insensitive' to 9 'highly sensitive'; structuring ranges from 1 'non-optimal' to 5 'optimal'; Non-intrusiveness ranges from 1 'intrusive' to 5 'non-intrusive'; Non-hostility ranges from 1 'markedly

hostile' to 5 'non-hostile'; and 'Child Involvement of Caregiver' and 'Responsiveness' each range from 1 'non-optimal' to 7 'optimal' (Biringen, 2008). Higher scores reflect a better overall quality of the affective relationship between parent and child (Biringen, 2008).

Psychometric properties:

The internal consistency of the EA Scales was reported as acceptable to good, $\alpha = .67$ - $.98$ (Bornstein et al., 2006a) and $\alpha = .71$ - $.84$ (Vliegen, Luyten, & Biringen, 2009). Test-retest reliability found a stability of $.59$ to $.67$ over 5 months (Bornstein et al., 2006a). Inter-rater reliability (IRR) was tested in several studies, showing good to excellent levels of IRR 86–100% ($\kappa = .81$ – 1.00) (Aviezer, Sagi, Joels, & Ziv, 1999), 93–100% ($\kappa = .76$ – $.96$) (Bornstein et al., 2006a), 75%–100% (Campbell & Johnston, 2009), $\kappa = .80$ (Robinson & Spieker, 1996), $\kappa = .95$ – 1.00 (Easterbrooks, Lyons-Ruth, Biesecker, & Carper, 1996) $r = .74$ – $.93$ (Koren-Karie, Oppenheim, Dolev, & Yirmiya, 2009) ICC = $.70$ (Trupe, 2010) and ICC = $.84$ – $.95$. (De Falco, Venuti, Esposito, & Bornstein, 2009) and ICC = $.80$ (Biringen et al., 2012).

The criterion validity of the EA Scales has been demonstrated within the context of postpartum depression (Vliegen et al., 2009), substance abuse (Salo et al., 2009), and economic disadvantage (Little & Carter, 2005). Although the majority of studies focus on the mother-infant relationship, the EA Scales have also been used to examine patterns of emotional availability in father-child dyads (Lovas, 2005). The EA Scales have been shown to have cross-cultural applicability, being employed in a variety of cultural contexts in over 20 countries, including North American, European, and Asian nations (Aviezer et al., 1999; Chaudhuri & Easterbrooks, 2009; Howes & Obregon, 2009; Ziv et al., 2000). Several studies have demonstrated construct validity with child attachment security using the Strange Situation (Biringen et al., 2014; Easterbrooks, Biesecker, & Lyons-Ruth, 2000; Easterbrooks & Biringen, 2000; Ziv et al., 2000) in particular EA maternal 'Sensitivity' related to attachment security (Sagi, Koren-Karie, Gini, Ziv, & Joels, 2002). The EAS have been used to examine maternal emotional availability in the context of postpartum depression (Vliegen et al., 2009), substance abuse (Salo et al., 2009), and economic disadvantage (Little & Carter, 2005). Although the majority of studies focus on the mother-infant relationship, the EAS have also been used to examine patterns of emotional availability in father-child dyads (Lovas, 2005). The scales have demonstrated cross-cultural suitability and have been employed in varying cultural contexts in over 20 countries, including North American, European, and

Asian nations (Aviezer et al., 1999; Chaudhuri & Easterbrooks, 2009; Howes & Obregon, 2009).

Emde (2000) summarised the links between EA and attachment security, outlining three studies documenting significant connections to attachment security/insecurity at 12 months and at 18 months. A third study establishes a link between observed emotional availability assessed at 7 years and prior observations of attachment at 18 months. Several studies demonstrated the concurrent construct validity of EA Scales, such as EA 'Maternal Sensitivity', 'Child Responsiveness', and 'Child Involvement' related to child attachment using the Attachment Behaviour Q-sort ($R^2 = .16$) (Altenhofen, Clyman, Little, Baker, & Biringen, 2013). 'Maternal Sensitivity', 'Maternal Structuring', and 'Maternal Non-Intrusiveness' as well as 'Child Responsiveness' and 'Child Involvement', were related to child attachment security measured by the Strange Situation Procedure (Ziv et al., 2000). 'Child Involvement' was linked with attachment security measured by the Attachment Q-Sort (Sutherland, Altenhofen, & Biringen, 2012). 'Maternal Sensitivity' was related to attachment security, measured by the Strange Situation Procedure (Sagi et al., 2002).

Training, time and cost:

Training is available onsite, with an offsite reliability testing process, or through an e-learning website. The EA Scales require extensive training from a certified instructor. The training involves reading and lectures, followed by practice on approximately 10 training videos of parent-child relationships. Training takes place across three days, after which there are approximately 10 hours of inter-lab reliability testing and feedback through the secure website (Biringen et al., 2014). The cost for training was GBP 595 per lab in 2016 (Zeynep Biringen, personal communication).

Summary:

From the clinician's point of view, emotional availability can serve as an indicator of how well (or not) things are going in the relationship in general. Although the EA Scales have been developed for research and are widely used in that field, they can be used in clinical workplace settings. However, the training and coding may be found to be too time-consuming for a clinical context. Moreover, the length of the video clip required might be problematic for some populations of mothers who feel easily scrutinised and controlled by such a lengthy videotaped observation but shorter observation times may limit the confidence and validity of results (Biringen, 2005).

In respect to the link between EA and attachment, Ziv and colleagues (2000) showed that maternal sensitivity on the EA Scales could only discriminate between secure and

insecure-ambivalent infant classifications, but not between avoidant and disorganized infants. Given that it is these two attachment classifications that predict later externalising problems (Munson, McMahon, & Spieker, 2001) and are more strongly associated with child maltreatment (Bodinetz, 2008), this is a major shortcoming in the assessment process. In a study of predominantly economically disadvantaged adolescent mothers, Ward and Carlson (1995) found no association between attachment security and EA 'Maternal Sensitivity'.

2.2.4. Child Adult Relationship Index (CARE-Index)

The Child Adult Relationship Index (CARE-Index; Crittenden, 2001; 2005; 2010) comprises the parental, infant and dyadic qualities of the parent-infant relationship and offers specific manuals for coding infant and toddler-parent interactions.

Content and Procedure:

The CARE-Index was developed as part of a system to assess attachment by Patriccia Crittenden. It induces little stress in the adult and none in the child, and therefore gives weaker information on child attachment than the stress-based SSP (Ainsworth et al., 1978) but, as the adult is a more active participant, it gives greater information on the parent's contribution to the child's attachment strategy (Crittenden, 2007). The CARE-Index Infants Coding Manual (Crittenden, 2010) can be used up to 15 months of age and comprises seven aspects of interactional behaviour, in particular three parental behaviours, 'Sensitive', 'Controlling' and 'Unresponsive' and four infant subscales, 'Cooperative', 'Difficult', 'Compulsive' and 'Passive'. The CARE-Index Infant Manual looks at 'Facial expression', 'Vocal expression', 'Position and body contact', 'Expression of affection', 'Turn-taking', 'Control' and 'Choice of activity'. Sensitivity is rated on a 14-point 'sensitivity scale' ranging from 14–9 'sensitive' to 4–0 'sufficient misattunement so that play is not possible at all'. A video taped interaction of 3–5 minutes is required and coding takes one hour. Coding can be reduced to a little more than half an hour if the individual coder is very experienced.

Psychometric properties:

Internal consistency of the CARE-Index has not been reported in the available literature. Inter-rater reliability was tested at 85% agreement (Crittenden, 1992;

Crittenden & DiLalla, 1988), $\kappa = .85$ (Bigras & Paquette, 2000) ($\kappa = .83$ to $.90$) Muller-Nix et al., 2004) among trained raters.

The Infant CARE-Index is validated and criterion validity was established for different groups of mothers: middle-class, low income, deaf, with learning difficulties, abusive and neglectful (Crittenden, 1988; Crittenden & Bonvillian, 1984) as well as for prospective longitudinal studies (Kemppinen, Kumpulainen, Moilanen, Raita-Hasu, & Ebeling, 2006; Simó, Rauh, & Ziegenhain, 2000; Ward & Carlson, 1995). In line with some of the other validated coding systems described above, the CARE-Index has been shown to distinguish between normative and high-risk samples. It is able to discriminate between mothers with and without psychiatric disorder (Hughes, 1993), and between irritable and non-irritable infants, establishing a subsequent link to maternal depression (Ayissi & Hubin-Gayte, 2006). Furthermore, it was validated for various risk conditions, for example maternal psychiatric disorder (Cassidy, Zoccolillo, & Hughes, 1996; Kemppinen et al., 2006), drug-exposed infants (Linares, Jones, Sheiber, & Rosenberg, 1999), maltreated infants (Crittenden & DiLalla, 1988; Leadbeater & Bishop, 1994) and premature infants (Muller-Nix et al., 2004).

Construct validity was established with the infant's patterns of attachment (Svanberg Mennet, & Spieker, 2010, PIIOS paper) and assessed with the Strange Situation Procedure (Ainsworth et al., 1978), along with prospective longitudinal studies (Kemppinen et al., 2006; Simó et al., 2000; Ward & Carlson, 1995).

Sensitivity to change was reported for brief mother-infant psychotherapy (Cramer et al., 1990, Robert-Tissot et al., 1996), health visitor's intervention (Jennings, 2004; Svanberg & Jennings, 2002) and early intervention for drug-exposed infants (Linares et al., 1999)

Training, time and cost:

The CARE-Index was developed for research use but has also been used in clinical settings. Training is delivered by certified trainers onsite for 10–12 days, as well as an offsite reliability test. Reliability for coding requires 3 or more scales, (1) at $\kappa = .80$ or higher, including both, maternal 'sensitivity' and infant 'cooperativeness', (2) a mean of $\kappa = .70$ or higher and (3) no scale below $\kappa = .50$. There are various levels of reliability required for specific use of the CARE-Index and re-testing of reliability after one year is a pre-condition for clinical and research reliability. The cost for training is GBP 1,400, with the re-test cost dependent on the lab and country (Pat Crittenden, personal communication).

Summary:

The CARE-Index offers a wide range of interactional qualities but is extremely time-

consuming and expensive to learn, and as it is a complex measure it is often hard for clinicians to become reliable, hence the confusing variety of thresholds for reliability. Many clinicians using the CARE-Index infrequently in their clinical work report concern regarding their reliability levels, as reliable and time-efficient coding requires using the CARE-Index routinely. Furthermore, the newly introduced mandatory reliability re-testing after just one year adds an additional cost and time requirement for those undertaking the CARE-Index training.

2.2.5. Parent-Infant Interaction Observation Screen (PIIOS)

The Parent-Infant Interaction Observation Screen (PIIOS; Svanberg et al., 2013) is a measure developed for the observation of parent-infant interactions and infants at risk from 0–6 months of age. It has been developed for health visitors to be used within the ‘Healthy Child Programme’, an early intervention program in the UK. For details see ‘Healthy Child Programme - Pregnancy and the first five years’ (Shribman & Billingham, 2009).

Content and Procedure:

The Parent-Infant Interaction Observation Screen (PIIOS) is a short screening tool for ‘high-risk’ dyads, derived from the CARE-Index and specifically developed to provide health visitors with a simple, easy-to-learn screening tool with which to assess the parent-infant relationship. This is particularly helpful since health visitors usually have neither access, nor the resources, to train on a highly complex and expensive parent-infant relational assessment measure, such as the CARE-Index (Svanberg et al., 2013). PIIOS focuses on the parent’s sensitive responsiveness or attunement, using sensitivity as defined and assessed by Ainsworth (1969), Ainsworth et al. (1978) and Crittenden (1988, 2001, 2005). It contains items derived from Ainsworth’s Sensitivity Scale (1969) and Crittenden’s CARE-Index (2001, 2005), as well as additional constructs based on research on ‘mid-range interactions’ when the infant is neither very active, nor passive, nor vigilant (Beebe & Lachmann, 1998). Finally, it assesses any dysregulated interactions that have been shown to be predictive of an infant’s attachment security (Beebe et al., 2010). PIIOS also includes a category developed from the research on ‘mind-mindedness’ (Meins, Fernyhough, Fradley, & Tuckey, 2001). PIIOS comprises 13 scales, 8 parent, 1 infant, and 4 dyadic, which are scored on a 14-point Likert Scale indicating ‘Sensitivity’ (low 1–14 high) and coded on a 3–4

minute video clip. PIIOS was not developed and reliability tested for 'live' observations, but can be used in that way as well. Coding one clip takes 30 minutes.

Psychometric properties:

Internal consistency of PIIOS showed good levels of positive correlation between each item score and the total score, ranging from .55 to .87, $\alpha = .96$, The inter-rater reliability (ICC) was excellent, ICC = .94 (95% CARE-Index (CI) ICC = .93-.95). After adjusting for interaction effects, ICCs for individual items were acceptable, ICC = 0.59 (95% CI ICC = .54-.65). In general, the lower the CARE-Index 'Sensitivity' score, the better the agreement between participants.

PIIOS has been validated against the CARE-Index maternal 'Sensitivity' scores $r = -.86$, $p < 0.001$. The individual participants' scores were also strongly correlated with the CARE-Index 'Sensitivity' scores, with correlation coefficients ranging from $r = .59$ to $.89$, controlled for the levels of CARE-Index reliability or years of experience. Based on the regression equation obtained, two cut-off points were derived based on the distribution of scores 'no concern', 'some concern', and 'considerable concern'. These cut-off values correspond to the cut-offs used for the CARE-Index maternal 'Sensitivity' scale.

Training, time and cost:

A 3-day training is provided by certified trainers onsite with an offsite reliability test. No re-test of reliability is required. The training cost in 2016 was GBP 450 (Jane Barlow, personal communication).

Summary:

PIIOS seems a suitable screening tool for maternal sensitivity from 0–6 months, as validity is very much focused on the concurrence with 'Sensitivity' assessed with the CARE-Index. Inter-rater reliability (IRR) testing found that the lower the CARE-Index 'Sensitivity' score the better the agreement between participants, which asserts PIIOS's relevance as a screening tool. The IRR research showed excellent results for the overall coding of the scale and acceptable levels of IRR on item level, but the sample size of 14 appears very limited and does not meet the standards of IRR calculations (Zou, 2012). Establishing the construct validity using the CARE-Index 'Sensitivity' scale seems unusual, as some items have been derived from that very scale and therefore high correlations between both scales are clearly expected. More generally, PIIOS's central focus on sensitivity is surprising since more recent research shows that sensitivity in itself is only a moderately strong predictor of secure

attachment (De Wolff & van IJzendoorn, 1997) and therefore limited sensitivity may not be a sufficient indicator of risk in itself. Furthermore, PIIOS's emphasis on maternal sensitivity, responsiveness and attunement seems predominant as PIIOS only includes one specific infant scale. Although some of the dyadic scales obtain information on specific infant states and their behaviours or reactions to the caretaker, the baby seems to be a passive recipient of parental input rather than an active partner impacting on the quality of the interaction. PIIOS therefore clearly serves as a screening tool for 'high-risk' dyads based on 'high-risk' maternal or paternal relational behaviours, but does not enable health visitors (who are generally very much focused on observing parental behaviour) to detect the subtleties of the baby's expression when something is not right in the emerging relationship. That is clearly of great importance in those cases where parents appear to cope well and manage to present as being very competent when underneath they may be clearly depressed, stressed, severely traumatised or personality disordered.

2.3. Measures Focused on Behaviours Associated with Disorganized Attachment

This paragraph gives a brief overview of measures focused on behaviours associated with disorganized attachment.

Given the link between maternal sensitivity and infant security of attachment, one would expect that sensitivity would also be highly predictive of attachment disorganization in the Strange Situation. McMahan True, Pisani and Oumar (2001) carried out a study of mothers and infants with a high prevalence of disorganized infant attachment and found that maternal sensitivity was not significantly related to infant attachment security. A meta-analysis focusing on disorganized attachment demonstrated a very small effect size relating to attachment disorganization and maternal sensitivity (Van IJzendoorn, Schuengel, & Bakermans-Kranenburg, 1999). Taken together, these findings have demonstrated the need for picking out other aspects of caregiver behaviour in order to identify the most extreme levels of relational risk within the parent-infant relationship. Given the association between trauma and disorganized attachment in infancy, it is essential that we identify the aspects of the parent-child relationship that are characteristic of infants who are more likely to manifest a disorganized attachment pattern. As the disorganized attachment pattern appears to be independent of temperamental or constitutional elements related to the child (Carlson, 1998; Schuengel, Bakermans-Kranenburg, & van IJzendoorn, 1999), attention has centred on how this may emerge from the parent-baby relationship.

Although these measures are clearly focused on maternal behaviour, they are included here due to their enormous clinical importance when assessing risk in the parent-infant relationship. Measures focusing on the assessment of these behaviours are included in Table 2.3.

Table 2.3. Measures focused on behaviours associated with disorganized attachment

| Measure | Author/s | Age | Setting | Parent | Infant | Dyadic | Psycho-metric |
|--|--|--------------------|---|--|--------|--------|---|
| The Frightened/Frightening (FR) coding system | Main & Hesse, 1992, 2005 | 12-24 months (SSP) | Video-taped interactions at Strange Situation Procedure (SSP), free play in lab setting or at home | frightening/threatening, frightened, dissociated, timid/deferential (role reversing), sexualised, and disorganised/disoriented | none | none | Single rating on a 9-point Likert-Scale, Clin. Cut-off: Scores > 5 are classified as FR |
| The Atypical Maternal Behavior Instrument for Assessment and Classification (AMBIANCE) | Bronfman et al., 1999 | 12-24 months (SSP) | Video-taped interactions, at Strange Situation Procedure (SSP), some research on free play | affective communication errors, role-confusion, disorganised/disoriented behaviours, negative-intrusive behaviour, and withdrawal | none | none | Single rating on a 7-point Likert-Scale, and italicized (risk) behaviors, level of disrupted communications, parental classification (disrupted or not) |
| Disconnected and extremely insensitive parenting (DIP) | Out, Bakermans Kranenburg & van IJzendoorn, 2009 | 12-24 months (SSP) | Video-taped interactions, at Strange Situation Procedure, free play, feeding and 'competing demand' | Disconnected behaviours and Extreme Insensitivity (subdimensions: withdrawal & neglect/intrusive or negative. harsh or aggressive) | none | none | Single rating for each dimension and sub-dimension on a 9-point Likert-Scale, |

2.3.1. Frightened/Frightening Coding System (FR coding system)

The Frightened/Frightening coding system (FR coding system, Main & Hesse, 1992, 2005) has emerged from the increasing recognition and interest in the disorganized attachment classification of infants (Main & Solomon, 1986).

Content and Procedure:

Parental 'frightening/frightened' and 'atypical behaviours' are associated with dissociation in the parent and have been shown to be predictive of infant disorganization (Hesse & Main, 1999, 2006; Main & Hesse, 1992; Schuengel, Bakermans-Kranenburg, van IJzendoorn & Blom, 1999; McMahan True et al., 2001). The dissociative and threatening subscales are particularly predictive (Abrams et al., 2006). Main and Hesse (1990, 1992) proposed that parents classified as 'unresolved' would display collapses of their caregiving behaviour when unresolved memories and

affects suddenly intruded into their consciousness. These anomalous and unpredictable behavioural lapses are thought to create fear, confusion and disorientation in the infant, and to subsequently lead to the development of a disorganized attachment relationship (Out et al., 2009). As such, Main and Hesse (1992) developed the FR coding system to capture these FR behaviours, focusing on 'Frightening/Threatening Behaviours' (e.g., looming or assuming attack postures toward the infant), 'Frightened Behaviours' (e.g., frightened facial expression, pulling or backing away from the infant) and 'Direct Indices for Dissociation' (e.g., freezing, stilling, sudden changes in voice, sudden changes in mood or state). These behaviours have parallels to that of animal behaviour displayed in response to severe threat or trauma (Nijenhuis, Vanderlinden, & Spinhoven, 1998). Furthermore, Main and Hesse included 'Deferential', 'Sexualized/Spousal' and 'Disorganized/Disoriented' behaviours, as observed in parents of disorganized-attached children (Out et al., 2009). In the FR coding system, such behaviour is coded on a 9-point scale for each subscale, as well as a final score on the severity and pervasiveness of the observed behaviours. Scores above 5 are classified as FR, those below 5 are not, and a score of 5 is borderline. Coding has been applied to free play, caregiving and structured interactions in the home and laboratory. The length of observations has varied between 30 minutes and four hours (Hesse & Main, 2006).

Psychometric properties:

Psychometric information regarding the FR coding system is limited, as research has been mainly focused on the link between maternal attachment and unresolved loss or trauma with infant disorganization. Studies consistently found that maternal FR behaviours are predictive of infant disorganization (Schuengel, Bakermans-Kranenburg, & van IJzendoorn, 1999; McMahan True et al., 2001), particularly the 'Dissociative' and 'Threatening' behaviour subscales (Abrams et al., 2006). The criterion validity was established through relating maternal unresolved attachment status on the Adult Attachment Interview to FR behaviour (Abrams et al., 2006; Schuengel, Bakermans-Kranenburg, & van IJzendoorn, 1999; Jacobvitz, Leon, & Hazen, 2006). Maternal sensitivity rated on Ainsworth's Sensitivity Scale was not significantly correlated with maternal FR behaviour (MacMahan True et al., 2001), and FR behaviour was a better predictor than maternal sensitivity of infant attachment classifications. Several studies have confirmed the relations between unresolved loss, FR behaviour, and disorganized attachment (Abrams et al., 2006; Jacobvitz et al., 2006; Schuengel, Bakermans-Kranenburg, & van IJzendoorn, 1999; McMahan True et al., 2001; for a meta-analysis see Madigan, Bakermans-Kranenburg, et al., 2006). The empirical relation between dissociative phenomena and FR behaviour appears to be

less unequivocal, as Schuengel and colleagues (1999) did not find a relation between FR behaviour and self-reported dissociative episodes. Reporting dissociative experiences requires at least some conscious awareness of these episodes, in contrast to the observation of FR behaviour (see for a similar discussion on PTSD symptoms, Turton, Hughes, Fonagy, & Fainman, 2004). Clearly, more research on alternative measures of dissociation that are less dependent on self-report (Van IJzendoorn & Schuengel, 1996) is necessary to test the possible connection between dissociation and FR behaviour.

Training, time and cost:

A five to seven day training provided by the authors is required to use the FR coding system, followed by an offsite reliability test including 30 clips. The threshold for sufficient inter-rater reliability is set at $\geq 80\%$, no re-test of reliability is required. The training cost was estimated at approximately USD 1,000 (Erik Hesse, personal communication).

Summary:

The FR coding system has provided a valuable and quite distinct approach to the assessment of parent-infant interactions, as it does not correlate with maternal sensitivity but does predict infant attachment patterns, in particular disorganized attachment. It is highly relevant for clinical work and research as it focuses on parental behaviours resulting from unresolved loss or trauma and their link with infant disorganization. However, as it centres on the psychopathological aspects of the interaction, the FR coding system should be used in conjunction with another observational measure to assess the parent-infant relationship. This will ensure that the subtle signs of an at-risk derailed relationship may be captured but also that the more positive aspects of the interaction indicating resilience may be assessed.

2.3.2. Atypical Maternal Behavior Instrument for Assessment and Classification (AMBIANCE)

The AMBIANCE (Bronfman, Madigan, & Lyons-Ruth, 2004, 2009 [Manual version 2.0]; Bronfman, Parsons & Lyons-Ruth, 1992 [Manual version 1.0]) expands upon Main and Hesse's aforementioned FR coding system (1992) to incorporate a broader range of disrupted parental behaviours, including extremely insensitive behaviours.

Content and Procedure:

AMBIANCE is an elaboration and expansion of Main & Hesse's FR coding system (1992), whilst additionally assessing the level of disruption and intrusive/self-referential or withdrawing behaviours such as, affective communication errors, role-confusion, disorganized/disoriented behaviours, negative-intrusive behaviour and withdrawal. AMBIANCE scores are based on both extremely insensitive and frightening parental behaviours, but do not distinguish between these two. Furthermore, some FR behaviours (e.g., looming) are also considered to be extremely insensitive (Jacobvitz et al., 2006).

AMBIANCE relies on the coding of behaviours from an open-ended list of more than 140 items. Ratings are then given on a 7-point scale for each of the five subtypes of disrupted interaction: (1) 'Affective Communication Errors', (2) 'Role/Boundary Confusion', (3) 'Frightened/Disorientated Behavior', (4) 'Intrusiveness and Negativity', and (5) 'Withdrawal'. Parents are assigned a score on a qualitative 7-point rating scale to indicate the global level of disrupted communication. A classification of disrupted or non-disrupted behaviours is also assigned based on this scale. AMBIANCE was developed to be coded on the Strange Situation Procedure, but has also been used to assess parent-infant interactions at free play (Madigan, Bakermans-Kranenburg et al., 2006). Coding takes about an hour. AMBIANCE has been adapted for use with parent-infant interactions involving younger infants, aged four months, by Kelly (2004), and has also been used for interactions between parents and older children, aged seven years (Benoit et al., 2005).

Psychometric properties:

Inter-rater reliabilities on the AMBIANCE dimensions were evaluated for free play as, 'Affective Communication Errors' ICC = .90–.96, 'Role/Boundary Confusion' ICC = .54–.84, 'Fearful/Disoriented Behavior' ICC = .78–.87, 'Intrusive/Negative Behavior' ICC = .81, 'Withdrawal' ICC = .87–.86, 'Level of Disrupted Communication', ICC = .87–.94 and disrupted classification agreement was 89% (Madigan, Moran et al., 2006).

Concurrent validity has been established with the level of maternal reflective functioning (Grienberger, Kelly, & Slade, 2005).

The broader set of anomalous parental behaviours indicative of disruptive parent-child communication was associated with disorganized attachment and unresolved loss in several studies (e.g., Goldberg, Benoit, Blokland, & Madigan, 2003; Grienberger et al., 2005; Lyons-Ruth, Bronfman, & Parsons, 1999; Lyons-Ruth, Yellin, Melnick, & Atwood, 2005; Madigan, Moran et al., 2006; for a meta-analysis see Madigan, Bakermans-Kranenburg, et al., 2006). Extreme forms of parental insensitivity may also result in disorganized attachment (Out et al., 2009). Indeed, when frightening,

frightened, dissociated and role-reversed behaviours were excluded from the AMBIANCE assessment, the final score for the remaining atypical behaviours was still associated with infant disorganization (Lyons-Ruth, Bronfman, & Atwood, 1999). The subscale 'Affective Communication Errors' of the AMBIANCE, which is most reflective of extreme insensitivity, was also related to infant disorganization in a recent study (Madigan, Moran, et al., 2006). Two studies on the relationship between FR behaviour and infant disorganization showed that the subscale 'Direct Indices of Dissociation' was particularly predictive of infant disorganization (Abrams et al., 2006; Schuengel, van IJzendoorn, Bakermans-Kranenburg, & Blom, 1998). Over time, significant correlations of disrupted classifications on the AMBIANCE demonstrate its stability from 12- to 24-months (Forbes, Evans, Moran, & Pederson, 2005) and from 12-months to seven years (Benoit et al., 2005).

Sensitivity to treatment change has been demonstrated in one study of parents and their infants with feeding problems, through comparing Interaction Guidance with a feeding intervention (Benoit, Madigan, Lecce, Shea, & Goldberg, 2001). They found that Interaction Guidance, but not the feeding-focused intervention, significantly reduced the level of maternal disruption on the AMBIANCE.

Training, time and cost:

A 3-day onsite training is provided by the authors of the AMBIANCE, with a reliability testing of 20 clips offsite, including personal consultation from the authors. The cost of the training is USD 1,200, and USD 200 for the reliability test per person, or USD 500 per lab in 2016 (Sheri Madigan, personal communication).

Summary:

The exact nature of the parental behaviours that compromise the development of an organized attachment relationship remains equivocal in studies using the FR or AMBIANCE systems. The FR behaviours described by Main and Hesse constitute 17% of the behaviours listed in the AMBIANCE coding system. The additional behaviours in the AMBIANCE, not including frightened and frightening behaviours in the total 'Disrupted Behavior' score, were able to discriminate between organized and disorganized infants alone (Lyons-Ruth & the Boston Study Group, 2001). This indicates that the wider spectrum of atypical maternal behaviour is a better predictor of disorganized relationships than just the FR behaviours alone.

2.3.3. Disrupted and Extremely Insensitive Parenting (DIP)

Disrupted and Extremely Insensitive Parenting (DIP) (Out et al., 2009) is based on the FR coding system (Hesse & Main, 1992) and AMBIANCE coding system, focusing on the assessment of disconnected behaviours and extreme insensitivity.

Content and Procedure:

The DIP measure was developed to assess distinct negative parenting behaviours, including 'Disconnected Parental Behavior' (DMB) and 'Extreme Insensitivity', such as 'Insensitive Withdrawn-Neglectful Behavior' (WNMB) and 'Insensitive Intrusive-Aggressive Behavior' (IAMB).

The first dimension of the DIP, 'Disconnected Parental Behavior', contains all behaviours from the FR coding system. The descriptions and coding instructions for each item were adapted to ensure that each FR behaviour was not solely insensitive but could also indicate a possible dissociative state. The term 'disconnected behavior' refers to this sudden change in normal (and possibly sensitive) parenting behaviour as well as to dissociative phenomena, which may underlie these behaviours and instigate a disconnection from the immediate environment. The second dimension, 'Extreme Insensitivity', includes those items from the AMBIANCE that refer to withdrawn and neglectful parenting, as well as to overly intrusive, negative, aggressive, or otherwise harsh, parental behaviours. Parental behaviour was observed in a laboratory setting during three different contexts, such as free play, unstructured time and a competing demand situation. These elicited a wide range of parenting behaviours. Behaviours were coded on a 9-point scale every time they occurred, and for both dimensions a final score was assigned, equal to the highest individual score or one point higher when the parental behaviour was severe or occurred frequently. Final scores of 6 and higher are classified as disconnected or extremely insensitive. Unfortunately, the available information on the DIP coding system does not specify the amount of time it takes to code DIP.

Psychometric properties:

Internal consistency of the measure has not been reported. The validation study (Out et al., 2009) shows that parental disconnected behaviour and extremely insensitive behaviour can be reliably assessed with the DIP coding system. Intraclass correlations (single rater, absolute agreement) ranged from .80 to .83 for 'Disconnected Behavior' and from .80 to .88 for 'Extreme Insensitivity'. Percentage of agreement on the disconnected classification ranged from 79% to 93% (mean $\kappa = .67$). Percentage of agreement on the extreme insensitivity classification was 86% for each pair of coders

(mean $\kappa = .72$). Recent studies showed high inter-rater reliability (IRR), both for 'Disconnected' ICC = .92, and 'Insensitive' ICC = .79. Regarding group classification, the percentage agreement was 85% for mothers who manifested 'Disconnected Behaviors', $\kappa = .70$, and 95% for those who showed 'Insensitive Behaviors', $\kappa = .90$, indicative of good IRR (Ensink et al., 2017) and ICC = .75 to .97 (ICC, single measure, absolute agreement) for 'Disconnected Behavior' ICC = .83, for subscale 'parental withdrawal and neglect' ICC = .97, for subscale 'intrusive, negative, aggressive behaviour' ICC = .83, and for 'extremely insensitive behavior' ICC = .75. (Van Ee, Kleber, Jongmans, Mooren, & Out, 2016). Construct and discriminant validity of the DIP was established in two previous studies, with 'Disconnected Behavior' predicting infant disorganization but not organized attachment security and 'Extreme Insensitivity' predicting insecure attachment but not disorganized attachment (Luijk et al., 2011; Out et al., 2009). Stability over time and sensitivity to treatment change have not yet been demonstrated.

Training, time and cost:

Training is provided by reliable DIP trainers and consists of 5 workdays, with mornings training during which practice tapes are coded and discussed, and afternoon homework. In total, the participants invested about one week for training and one week for reliability tapes. Children were aged between 12 months and 3 years. Interrater reliability for the continuous measures over 20 clips is preferably above ICC $\geq .70$ (absolute agreement) and $\kappa \geq .70$, but because of skewed distribution, the percentage of agreement is also important. Training is provided for labs on an individual basis, therefore there is no general information available regarding the training fee (Dorothee Out and Maartje Luijk, personal communication).

Summary:

Parental 'Disconnected Behavior' and 'Extremely Insensitive Behavior' can be reliably assessed with the Disconnected and Extremely Insensitive Parenting (DIP) coding system.

Most of the previous studies on attachment disorganization utilised existing coding systems, the FR (Main & Hesse, 1998) and the AMBIANCE (Bronfman et al., 2004), neither of which offers a clear distinction between extreme insensitivity and frightening behaviour. Therefore, disconnected and extremely insensitive behaviours are coded separately in the DIP coding system to investigate their unique contribution to the development of disorganized attachment. Construct and discriminant validity of the DIP were established for both types of parental behaviours: disconnected parental

behaviour predicted infant disorganization but not organized attachment security, while extreme insensitivity was marginally related to infant insecurity in boys but not to attachment disorganization. Further research is required in order to establish DIP's sensitivity to change during treatment. With regard to professional experience required, coding these FR and insensitive behaviours can be very difficult and therefore requires a background in child psychology and familiarity with attachment theory.

2.4. Measures focused on the Embodied Aspects of the Parent-Infant Relationship

Several psychoanalysts such as Spitz (1965), Dolto (1984), Anzieu (1993) and Palacio-Espasa (2007) have written about the sensory and bodily aspects of the parent-infant interaction, focusing on the infant's body image within the development of the infant's self. Various aspects of kinaesthetic quality may reflect and convey different mental states, especially in combination with others (Brazelton et al., 1974; Cicchetti & Rogosch, 1996). Thus, any simplistic 'taxonomy' of mental meaning of particular body movements would be misleading. Fundamentally, kinaesthetic qualities reflect some form of mental state that can be reliably interpreted by an observer. Several movement analysis paradigms offer valuable means of characterising human movement and its emotional expression, although for individuals rather than dyads (e.g., Kestenberg, 1965; Laban & Lawrence, 1947). However, the Kestenberg Movement Profile and the Parental Embodied Mentalizing Coding System (PEM) identify several kinaesthetic patterns as of prime importance when considering parent–infant interactions and their dyadic qualities (Birklein & Sossin, 2006; Shai, 2010, 2011; Shai & Belsky, 2011; Sossin, 2002).

2.4.1. The Parental Embodied Mentalizing Coding System (PEM)

Psychoanalytic concepts such as 'embodiment', and 'parental embodied mentalizing', a construct introduced by Shai & Belsky (2011), focus not only on verbal or pre-verbal expressions but also on bodily movement (kinaesthetics) during the parent-infant interaction, "in order to fully capture the interactive mentalizing processes" (Shai & Belsky, 2011, p. 173). Kinaesthetic qualities significantly reflect some kind of mental state that an observer can reliably interpret, and therefore the Parental Embodied Mentalizing Coding System (PEM) is a theoretical construct as much as it is a method to assess embodied relational aspects. For details regarding the theoretical construct see Chapter 1.

Content and Procedure:

PEM (Shai, 2011) is based on the theoretical construct of mentalizing, the capacity to understand behaviours beyond observable actions, in terms of underlying mental states (Fonagy et al., 2007; Fonagy et al., 2002). "The mother's observations of the

moment to moment changes in the child's mental state, and her representation of these first in gesture and action, and later in words and play" allows the infant to experience maternal mentalizing capacities, representing "the links between affect, behavior, the body, and self-experience" (Slade, 2005, p. 271). Parental mentalizing capacities are reflected in "parents' use of the very communicative means that infants employ: the nonverbal kinaesthetic mode" (Shai & Belsky, 2011, p. 175). Therefore, PEM focuses on the dynamic, moment-to-moment changes in whole-body kinaesthetic patterns during parent-infant interactions. The 'how' of interactive bodily actions is more important than 'what' actions are performed, and the spatial dynamic of closeness, approaching and retracting are emphasised. Parental embodied mentalizing claims to be "intrinsically dyadic" (Shai & Belsky, 2011, p. 176) as the mutual influence of both the parent's and the infant's actions regulate those of the other (Fogel & Branco, 1997; Gianino & Tronick, 1988).

Video-recorded parent–infant interactions are used to assess a parent's embodied mentalizing capacities. The focus is on the dyad, with the aim of capturing the quality of parental mentalizing as it unfolds on a somatic and kinaesthetic level during interactions with the infant. The coding system focuses on the degree to which the parent is kinaesthetically responsive to the infant's kinaesthetically manifested mental states during an interaction. The PEM coding system observes patterns visible in the parent–infant dance, reflecting the meeting of their mental states. It does not consider gaze patterns, facial expressions, nor any verbal behaviour. To code a parent's embodied mentalizing capacity, the video-recorded interactions are played at normal speed, although frequent pausing is permitted for viewing the interaction in frame-by-frame mode. The first stage of coding involves identifying episodes of parental embodied mentalizing, termed embodied circles of communication, including their onset and termination times. The second stage involves describing the kinaesthetic sequence of each embodied circle of communication in terms of movement qualities such as tempo, direction of movement, where the interaction occurs in space, its pacing and pathway in space, and how much muscle tension is used to execute it. The third and final stage involves rating the overall quality of parental embodied mentalizing capacity in each embodied circle of communication and then creating a summary, and a global parental embodied mentalizing score. The global PEM rating reflects the degree to which the parent typically manifests a kinaesthetic appreciation of the infant as a mental agent and implicitly uses this appreciation to modify his or her own kinaesthetic patterns to better suit those of the infant. A 7-10 minute videotaped interaction of free play is required for coding. PEM subscales and global rating are coded on a 9-point rating scale, with scores ranging from 'very low' (1) to 'very high'

(9).

Psychometric properties:

The IRR for the global PEM rating ranged from ICC = .84 to .92 ($p < 0.01$). The concurrent construct validity of the PEM Coding System was evaluated against the Home Observation for Measurement of the Environment (Caldwell & Bradley, 1984; $r = .39$), Sensitivity at Play (National Institute of Child Health and Human Development [NICHD] Early Child Care Research Network, 1997; $r = .33$), and Emotional Availability (Biringen et al., 2000; $r = .49$). Higher ratings of parental embodied mentalizing were significantly correlated with higher sensitivity and verbal parental mentalizing, as measured with the Parental Development Interview (Shai & Belsky, 2016). Moreover, parents' embodied mentalizing, measured at six months during free play, predicted infant attachment security at 15 months as well as internalising and externalising problems, social skills and competence, and academic performance (54 months) (Shai & Belsky, 2016). Interestingly, the PEM rating was unrelated to self-reported parenting stress.

Training, time and cost:

A four day training is provided by the first author at the cost of USD 935 plus a fee of USD 150 for reliability testing (10 videos at $\geq 80\%$ agreement).

Summary:

Results indicate that the quality of parent–infant interactions can be reliably assessed solely on the basis of the nonverbal ways in which the parent's and infant's bodies move and interact with one another. These serve as indicators of their wishes, needs, and expectations, rather than through examining the use of words, intonation, or eye contact. These findings highlight the importance of focusing on the subtle nuances of the relational dance between maternal and infant behaviour, a dance that the measurement of PEM is specifically designed to capture (Shai & Belsky, 2016). Future research on mentalizing would benefit from extending the measurement tools beyond verbal behaviour to nonverbal behaviour as well as on the quality of the parent-infant relationship, which could gain from a more kinaesthetic perspective in order to observe embodied aspects of parental mentalization.

2.5. Measures of the Global Quality of the Parent-Infant Relationship and Risk Assessment Tools in Paediatric, Psychiatric and Mental Health Services

The impressive body of research, which led to the development and refinement of the measures outlined, has contributed to the understanding and the assessment of the observable qualities of parent, infant and dyadic aspects of parent-infant interactions. It seems there are two main research streams on the assessment of the parent-infant relationship; firstly, the assessment of positive maternal behaviours within the sensitivity domain that facilitate secure attachments, and secondly, the observation of breakdowns within parent-infant interactions that are indicative of high levels of risk and the potential development of a disorganized attachment pattern.

In addition to the measures described in the previous sections, there is a variety of scales assessing the qualities of parent-infant interactions that have been identified by De Wolff and van IJzendoorn (1997) as core constructs of parenting behaviour. These include contiguity/contingency of response/responsiveness, physical contact, cooperation, synchrony, mutuality, emotional support, positive attitude and stimulation. Those scales have been developed by clinicians to observe the overall quality of the parent-infant relationship in a time-efficient manner, and within a clinical setting using either a global observation of specific relational aspects, or behaviour counts in order to assess the global quality of the parent-infant relationship. Many of them are applied in combination with a variety of self-report scales to screen for maternal mental health problems, assessing the severity of maternal psychiatric disturbances and their effect on the baby's development, as well as to screen for risk in the parent-infant interaction. Some of them have been used to evaluate early interventions or clinical treatment and have been used as outcome measures.

The following sections will give an overview of measures used in clinical assessment within paediatric, psychiatric and community mental health settings in the field of infant, maternal or perinatal mental health. A few of them, in particular those assessing dyadic aspects of the relationship, are widely used and therefore described in more detail.

2.5.1. Measures used in Paediatric Settings

Several scales were developed to assess risk in the early relationship, specifically within the context of routine physical examinations in paediatric services and well-baby clinics in the postpartum period. One such example is the Paediatric Infant Exam (PIPE; Fiese, Poehlmann, Irwin, Gordon, & Curry-Bleggi, 2001), which was developed to screen for problematic aspects of infant-parent interactions in playing peek-a-boo and focuses on interactional reciprocity. The observed interaction between the parent and infant is scored for the degree of interactional reciprocity and positive affect at the beginning, middle, and end of the game. Each segment of the game is rated on a 6-point scale from 1 to 6, with lower scores reflecting more favourable interaction patterns. A final score is then calculated by totalling the scores from the three segments of the game. The Alarm Distress Baby Scale (ADBB; Guedeney & Fermanian, 2001) was developed to screen for risk by assessing the baby's level of social behaviour in interaction with the examiner. Both tools established good inter-rater reliability in 'live' observations and in clinical cut-off scores indicating sub-optimal interactional behaviours. As the ADBB is widely used in clinical infant mental health work as well as research, it is therefore described in more detail.

2.5.1.1. Alarm Distress Baby Scale (ADBB)

The Alarm Distress Baby Scale (ADBB; Guedeney & Fermanian, 2001) was specifically designed for paediatric examination settings in order to prevent parents from feeling observed and assessed as to their competence in interacting with their baby, thereby likely to decline any further examinations.

Content and Procedure:

The ADBB assesses the infant's withdrawal behaviour on ten items that correspond with the interpersonal and non-interpersonal dimensions of withdrawal behaviour: facial expression, eye contact, general activity, self-stimulating gestures, vocalisations, response to stimulation, relationship to the observer, ability to attract attention, reaction to cuddling, and reaction to separation. Several authors have pointed out that withdrawal behaviour is related to infant depression (Spitz, 1946, 1951; Herzog & Rathbun, 1982; Powell & Bettes, 1992). The ADBB was therefore seen as an objective and valid measure of the early signs and the severity of the state of depression of the

child. The ADBB can be coded 'live' and on video coded assessments. The time needed for coding is not indicated within the available literature on the ADBB.

Psychometric properties:

The assessed internal consistency was $\alpha = .83$, and $\alpha = .80$ for the first subscale and $\alpha = .79$ for the second subscale. The inter-rater reliability between a nurse and a paediatrician during the live assessments of 60 infants with the ADBB was good (ICC = .84). Criterion validity was investigated observing the severity of the infant's withdrawal reaction, and a clinical cut-off score of 5 was developed (Guedeney & Fermanian, 2001). Construct validity was established regarding the age of the mother, parity, age of the father, age of the infant, birth order, and duration of the consultation (Guedeney & Fermanian, 2001). Furthermore, withdrawal assessed by the ADBB was validated against two available descriptions of infant depression, namely Spitz's anaclitic depression (1951) and Herzog & Rathbun's (1982) criteria. Factor analysis extracted two main factors accounting for 63.3% of the variance. The first factor (FI) has 5 items: 2 (eye contact), 3 (general level of activity), 4 (self-stimulating gestures), 7 (relationship), and 8 (attractivity). The second factor (FII) has 3 items: 1 (facial expression), 5 (vocalisation), and 6 (response to stimulation). The ADBB sensitivity to change was tested with a sample of mothers and babies from a well-baby clinic, assessing the impact of their consultations with good results (Bonifacino, Plevak, Musetti, & Silveira, 2014).

Training, time and cost:

The ADBB scale is available online, as well as an online based training which provides video clips and feedback for video clips coded by the trainee. As is indicated by the authors of the scale, only a short period of training is required for medical or non-medical professionals, particularly nurses or psychologists, in order to perform the assessment (Guedeney & Fermanian, 2001).

Summary:

The ADBB can be used for measuring the severity of withdrawal behaviour of infants or as a screening tool for detecting further developmental risk. The ADBB can easily be used in clinical practice, by non-medical personnel as well as medical personnel to assess the intensity of infant's withdrawal.

2.5.2. Measures used within Psychiatric and Mental Health Care Settings

A variety of scales have been developed to assess the global quality of the early relationship and to screen for risk, specifically for use within the context of infant mental health, maternal mental health, and perinatal mental health settings, from community healthcare settings to health visiting at home, and within both psychiatric and psychotherapeutic out- and inpatient services.

The following sections list the impressive number of measures and additional questionnaires widely used in psychiatric and mental healthcare settings and describes a few measures in more detail.

2.5.2.1. Parent-Infant Relationship Global Assessment Scale (PIR-GAS)

The Parent-Infant Relationship Global Assessment Scale (PIR-GAS) was developed by the task force responsible for the 'Diagnostic Classification of Mental Health and Developmental Disorders in Infancy and Early Childhood' (Zero to Three, DC: 0-3, 1994; Zero to Three, DC: 0-3R – revised, 2005; Zero to Three, DC: 0-5, 2017). PIR-GAS has been revised and updated within the 'DC: 0-3: Diagnostic Classification of Mental Health and Developmental Disorders of Infancy and Early Childhood' (Zero to Three, DC: 0-5, 2017). Given the age range this review is focused on and that the newly published DC: 0-5 version of PIR-GAS is yet to be sufficiently evaluated in clinical and research use, the 2005 version of PIR-GAS is described here.

Content and Procedure:

The Parent-Infant Relationship Global Assessment Scale (PIR-GAS) is designed to be completed after the clinical evaluation of the infant's problems. PIR-GAS can be used with children from birth to five years of age. It is a global assessment of the quality of the relationship between the parent/caregiver and the child and assesses three components of the relationship: the behavioural quality of the interaction, the affective tone, and the psychological involvement. The 100-point scale ranges from 'documented maltreatment' (1-10), 'grossly impaired' (11-20), 'disordered' (31-40), 'disturbed' (71-80) to 'adapted relationships' (91-100) and only one global score is rated. The PIR-GAS manual gives only vague recommendations as to how to rate the global quality of the parent-infant relationship, but rating PIR-GAS clearly requires an extensive anamnestic interview and an observation of the parent-infant relationship. PIR-GAS can be rated in various ways, from a retrospective review of a clinical chart over a 10-minute video sequence up to multiple-session diagnostics. The PIR-GAS

manual states that for a full evaluation of all five axes of the relationship assessment, the evaluation “requires a minimum of three to five sessions of 45 or more minutes each” (Zero to Three, DC: 0-3R – revised, 2005, p. 7-8). Coding a ‘live’ observation after an assessment session requires at least 45 minutes.

Psychometric properties:

Studies of the reliability and validity of the DC:0-3/DC:0-3R are rare, yet those studies which calculated the IRR found 92% agreement and an ICC = .83-.86 (Mueller et al., 2013). As PIR-GAS is an observational instrument inter-rater reliability is of primary concern, and a precondition for validity but as with diagnostic procedures in general, a great deal of clinical experience is required to reliably rate parent-infant dyads on the PIR-GAS. Therefore, achieving reliability, in particular establishing inter-rater reliability within a team of clinicians from different professional backgrounds, has been found to be problematic (Mueller et al., 2013). Nevertheless, PIR-GAS has been reliably used by a team of clinical psychologists, psychiatrists and psychotherapists to evaluate the outcome of parent-infant psychotherapy in an inpatient setting (Hommel, 2005).

Training, time and cost:

A two-day training provided by Zero to Three internationally at the cost of the DC: 0-3R Manual of USD 75 and a training fee of USD 50 - 100.

Summary:

Using PIR-GAS in a parent-infant psychotherapy setting shows that raters need not only extensive clinical experience and some familiarity in using PIR-GAS but also require sufficient time to discuss ratings within the team, in order to establish reliable ratings. Although, PIR-GAS’s multi-axial approach provides valuable information about the quality of the parent-infant relationship, PIR-GAS ratings can differ largely with respect to the setting and content of clinical material and experience of the rater. Furthermore, a closer look at the PIR-GAS manual reveals that several aspects of standardisation have not yet been determined in rating PIR-GAS (Mueller et al., 2013), which makes it difficult to produce reliable and comparable ratings.

In community mental healthcare settings, as well as in psychiatric parent-baby day care, and inpatient parent-infant psychiatry and psychotherapy, observation of parent-infant interaction is needed to obtain relevant information about the global quality of the relationship and identify areas of concern, which are very often focused on the acute risk of a derailed attachment relationship, maltreatment and deprivation. Rating scales developed for this purpose should enable easy training of multidisciplinary team

professionals, should be time-efficient to code as well as designed to not only assess risk and the need for intervention but also changes in the process of this intervention. One of the most widely used measures in this context is the Bethlem Mother-Infant Interaction Scale (BMIS; Hipwell & Kumar, 1996; Kumar & Hipwell, 1996; Stocky, Tonge & Nunn, 1996).

2.5.2.2. Bethlem Mother-Infant Interaction Scale (BMIS)

Content and Procedure:

The Bethlem Mother-Infant Interaction Scale (BMIS; Hipwell & Kumar, 1996; Kumar & Hipwell, 1996; Stocky et al., 1996), was designed to observe the overall quality of the parent-infant interaction in psychiatric inpatient settings over the period of one week.

The BMIS is a nurse rated scale, measuring seven variables: eye contact, physical contact, vocal contact, mood, general routine, risk to baby and baby's condition. The overall impression of mother–infant interaction over the previous week is rated. If one day varies significantly from another, the 'worst day' during the past week is then selected for rating. The scale measures global aspects of the mother's contribution to the dialogue with her baby, her capacity to organise and maintain routine care, staff perception of risk to the infant, and the infant's contribution to the interaction (Hipwell & Kumar, 1996; Snellen, Mack, & Trauer, 1999). These aspects of maternal interaction were rated on a 5-point-scale, the highest score indicating appropriate, sensitive and well-organised maternal interaction with her baby and the lowest score indicating disturbance of such severity that the mother was unable to sustain any meaningful dialogue or interaction with her baby. Ratings are usually made during team meetings at weekends and discussed within the team, so that the nurses can review their clinical notes and arrive at a consensus about the poorest level of interaction observed during the previous week, lasting for the longest duration of days (Hipwell & Kumar, 1996).

Psychometric properties:

The BMIS was designed as a measure of mother–infant adjustment in mother-baby units and has been demonstrated to be a reliable and valid instrument in an Australian mother-baby unit (Hipwell & Kumar, 1996, Stocky et al., 1996). The inter-rater reliability was tested for pairs of nurses for all subscales and was found to be moderate to good (eye contact = .57 to baby's condition = .73), excepting the scale assessing risk within the relationship ($r = .12$) (Hipwell & Kumar, 1996).

Training, time and cost:

Not reported.

Summary:

The BMIS is a good example of a global rating scale developed to assess the global quality of maternal interaction with a baby in a specific clinical setting. It clearly only focuses on the maternal ability to interact with her baby and therefore only includes one dimension about the baby's condition and does not take the baby's impact on the relationship nor the dyadic interaction into account. Interestingly, the BMIS does not reliably capture the level of risk within the mother-baby relationship, which indicates that future research is needed on the conceptualisation of the assessment of risk.

Treatment providers in the community regularly videotape parent-infant interactions as part of their intervention, in order to discuss interactions with the parent/s. As such, the providers prefer to use assessment tools that are designed to observe non- or semi-structured free play. Such measures are robust within each setting (home, clinic or research laboratory) and offer coding systems that quantify aspects of the parent-infant interaction rather than a complex qualitative approach, whilst still examining the quality of the dyadic interaction. Although professionals may realise the shortcomings of behavioural counts that provide incomplete information regarding the quality of parent-infant interactions, they feel they are generally simpler and easier to use in identifying risk, more time-efficient to train in and facilitate good reliability (Beatty et al, 2011). A number of scales that have evolved from a clinical background observe the frequency of parental and infant behaviours or look at sequences of interactional behaviours, such as the Interaction Rating Scales (IRS; Field & Pawlby, 1980; Field, Vega-Lahr, N., Goldstein, & Scafidi, 1987), the Greenspan Lieberman Global Observation Scale (GLOS; Greenspan & Lieberman, 1989), and the Global Rating Scales for Mother-Infant Interaction (GRS; Murray et al., 1996a). The Greenspan Lieberman Global Observation Scale (GLOS; Greenspan & Lieberman, 1989) and the Global Rating Scales for Mother-Infant Interaction (GRS; Murray et al., 1996a) are described in more detail as they have been both widely used and validated in clinical settings.

2.5.2.3. Global Rating Scales for Mother-Infant Interaction (GRS)

Content and Procedure:

The Global Rating Scales for Mother-Infant Interaction (GRS; Murray et al., 1996a) were initially developed for research purposes, to distinguish between the mother-infant interaction of both depressed and non-depressed mothers, two to four months after birth.

The GRS comprises 25 subscales, 7 infant, 13 maternal, and 5 joint interactive behaviours occurring within a five minute period of face-to-face interaction without toys. These subscales are coded on 5-point rating scales, from 1 (poor) to 5 (good). Scale scores are clustered into 3 infant, 4 maternal, and 1 dyadic category. Maternal dimensions describe mother's overall sensitivity, intrusiveness, remoteness, and affect, in particular signs of depression. Infant dimensions observe the level of communication, interactive behaviour, whether inert or distressed. Finally, the interactive dimension describes mutual engagement, such as smooth and easy/difficult, fun/serious, satisfying/unsatisfying, much engagement/no engagement and excited engagement/quiet engagement.

Psychometric properties:

Intraclass correlations computed on the summary GRS measures showed good agreement for infant (ICC = .88 to .98), and maternal behaviour (ICC = .73 to .92) and for the interaction scale (.89) (Montirosso et al., 2012), with a mean IRR of ICC = .75 (range .68 - .88) (Agostini, Neri, Dellabartola, Biasini, & Monti, 2014).

GRS have shown good criterion validity for a number of clinical groups such as depression and schizophrenia, social adversity, and low-risk/high-risk groups (Murray, Stanley, Hooper, King, & Fiori-Cowley, 1996c; Riordan, Appleby, & Faragher, 1999; Gunning, Murray, & Lawson, 2002). It has also been validated cross-culturally through studies in South Africa, Venezuela, Japan and many European countries (Cooper et al., 1999; Gunning et al., 2004). Moreover, it has been used to investigate associations between infant psychological profiles, temperament and quality of mother-infant interaction (Costa & Figueiredo, 2011; Murray et al., 1996c).

Predictive validity was shown for the quality of the interaction assessed by the GRS coding system and child cognitive outcome at 18 months and five years of age (Murray et al., 1996a; Murray, Hipwell, Hooper, Stein, & Cooper, 1996b).

Training, time and cost:

Not reported.

Summary:

The Global Rating Scales for Mother-Infant Interaction have been used extensively in research into early mother–infant interaction as evidenced by the original paper (Murray et al., 1996a), which has been cited over 600 times. They provide for the reliably tested and well-validated assessment of the early parent-infant relationship, capturing the subtle signs of postnatal depression.

2.5.2.4. Greenspan Lieberman Global Observation Scale (GLOS)**Content and Procedure:**

The Greenspan-Lieberman Observation System for Assessment of Caregiver-Infant Interaction During Semi-Structured Play (GLOS; Greenspan & Lieberman, 1980, 1989) is a frequency count rating scale of parent-infant interaction. GLOS was developed to assess mother-infant relationships, cataloguing behavioural manifestations of contingency, anti-contingency and noncontingent behaviours. Contingency refers to the caregiver's ability to accurately read the baby's rhythms and signals and to respond appropriately to the baby's needs, whilst anti-contingency refers to the caregiver's lack of attention and/or capacity for mothering (Krystal, 1990). The scale lists observable maternal (punishment, over- stimulation, consolation, pleasure, etc.) and infant (resist contact, distress, aggressive behaviour, pleasure, flat affect, etc.) behaviours. Contingency between the two partners, i.e. the capacity to perceive and respond appropriately to the other's signals is also identified. GLOS is rated on a ten minute video recording of free play between mother and infant, coding the presence or absence of the behaviours described above for each 15-second interval.

Psychometric properties:

Several of the studies that assessed interactions between mothers and infants considered developmental risk, including children of depressed or drug-addicted mothers (Hofheimer, Pearson, Aydtlett, & Lawson, 1990). Construct, predictive validity and test–retest reliability were evaluated (Fox, Stifter, Greenspan, & Poisson, 1985; Hofheimer, Lieberman, Strauss, O'Grady, & Greenspan, 1985). Maternal contingent and anti-contingent behaviours assessed with GLOS predict Bayley Mental Development Index scores at 24 months (Fox et al., 1985).

Inter-rater reliability (IRR) for the newborn version of the Greenspan-Lieberman Observation System (GLOS-N; Hofheimer, Poisson, Eyler, & Greenspan, 1986;

Hofheimer & Appelbaum, 1992) found good to excellent levels of IRR (ICC = .84 to .99, mean ICC = .87). Construct, and predictive validity, as well as test-retest reliability were demonstrated using data from a multisite validation sample (N = 125 to N = 563) followed from birth through 2-4 years (Hofheimer & Appelbaum, 1992; Hofheimer, Packer, & O'Grady, 1987; Poisson, Hofheimer, Strauss, Lieberman, & Greenspan, 1983).

Training, time and cost:

Not reported.

Summary:

GLOS is a frequency count rating scale of parent-infant interaction. It provides a validated and reliable assessment of contingency in the parent-infant interaction, resulting in a global level of relational quality.

Furthermore, there are several measures assessing the global quality of the parent-infant relationship through micro-analytic coding of relevant behaviours, such as parental emotion, physical affect, vocalisation, verbal restrictions, congruency, variability, contingency, stimulation and the child's emotion, looking, reactivity (contingency) and readiness to interact. These variables are coded per minute of interaction in the Mannheim Rating System for Mother-Infant Interaction (Esser et al., 1990), a categorical system for micro-analysis of the early mother-child interaction (Joerg et al., 1994), the Munich Communication Rating Scale (Muenchener Klinische Kommunikationsdiagnostik (MKK; Papoušek, 1995), the Kochanska's affect coding system (Kochanska, 1998; Kochanska & Aksan, 1995;) and, more recently, the LoTTs Parent-Infant Interaction Coding Scale (Beatty et al., 2011).

These micro-analytic coding systems provide an impressively detailed observation of the subtle minute-to-minute changes within the interaction between parents and their babies, but are primarily used for research and rarely in clinical settings. They are time-consuming to train in and to use, as well as require extensive experience in the observation of parents and babies interacting with one another.

In research, a number of these systems have been applied in combination with parental self-report questionnaires to capture parental thoughts, representations and concerns about the parent-infant relationship, such as the Postpartum Bonding Questionnaire (PBQ; Brockington et al., 2001; Brockington, Fraser, & Wilson, 2006),

Mother to Infant Bonding Scale (MIBS; Wittkowski, Wieck & Mann, 2007), the Mother and Baby Interaction Scale (MABISC; Høivik, Burkeland, Linaker, & Berg-Nielsen, 2013), and self-report scales to screen for postpartum psychiatric illness, e.g. Edinburgh Postnatal Depression Scale (EPDS; Cox, Holden, & Sagovsky, 1987) or psychiatric interviews, such as the Birmingham Interview for Maternal Mental Health (Brockington, 2006).

2.6. Why do we need another Assessment Tool to assess Risk and the Global Quality of the Parent-Infant Relationship?

There is an impressive body of evidence that indicates that direct observation of the quality of the mother-baby interaction (see 1.2.), alongside comprehensive interviews eliciting the mother's representation of her relationship with her infant, such as The Working Model of the Child Interview (Zeanah, Keyes, & Settles, 2003), The Adult Attachment Interview (Main & Goldwyn, 1993; George, Kaplan, & Main, 1996), Reflective Functioning (RF) on the Parent-Infant Development (PDI) (Slade, Bernbach, Grienenberger, Levy, & Locker, 2004) and RF on the AAI (Fonagy, Target, Steele, & Steele, 1998) are the 'gold standard', both in clinical practice and research. However, these methods have been developed for research purposes and the associated measures tend to have unpublished manuals, demand considerable clinical experience and might therefore exclude many health professionals from accessing them. They are also time consuming to use and to train in, and demand extensive and expensive training, reliability training and testing. Over the longer term the maintenance of skills and re-testing of reliability, makes them clearly less suitable for use in primary care, public health care service and infant mental health services.

Since GPs, health visitors and community nurses are uniquely well placed to identify problems in the parent-infant relationship (NICE, 2006) it is vital that they are able to identify aspects of the parent-infant relationship that are a cause for concern. They require assessment tools that enable them to observe the quality of the parent-infant relationship and identify areas of concern, which can be used reliably within a variety of workplace settings. As described in the previous paragraph, current measures tend to focus on maternal behaviour ratings, screening of psychiatric illness and the detection of acute risk, such as child maltreatment and deprivation. When assessing the parent-infant relationship through direct observation there is a bias towards interactional rating scales using behaviour counts, "although behavioural counts provide incomplete information" (Beatty et al., 2011, p. 87). However, many health professionals working in the field find behavioural counts impractical within their workplace setting, as counting behaviours may mean they lose the sense of the dyadic quality of the mother and baby interaction as it unfolds. Another criticism is that these scales omit descriptors of the global quality of the relationship to be communicated to parents, and do not facilitate understanding of the complex nature of a disturbed interaction. Although behaviour counts are thought to facilitate good inter-rater reliability there is nevertheless evidence of considerable variability in the judgements about mother-infant interactions (Appleton, Harris, Oates, & Kell, 2013).

Government policies in many countries around the world emphasise the importance of early intervention, reflecting an increased recognition that health and social inequalities have their origins in early parent-infant interaction (Field, 2010), and that children's access to positive early relational experiences needs to be addressed (Marmot, 2010). And a growing body of evidence points to the effectiveness of parent-infant psychotherapy in terms of improving both parental functioning (Cohen et al., 1999; Cohen, Lojkasek, Muir, Muir, & Parker, 2002; Granqvist et al., 2017), and fostering secure attachment relationships in young children (for an overview see Barlow, Bennett & Midgley, 2013 and Granqvist et al., 2017). "For an infant, the parent is the world, so by changing the behaviour of the parent, we change the infant's world. This in turn enables a transformation of the child's behavioral regulation and sense of confidence in the caregiver" (Granqvist et al., 2017, p. 16). That this can often be effectively done with short-term parent-infant psychotherapy is remarkable and should counteract any misconception that child attachment patterns - whether disorganized or not - are fixed/static traits.

Infant mental health services state that problems with the parent-infant relationship are common and the parent-infant interaction is a significant factor in infant mental health focused interventions (Fonagy & Target, 2002).

Community healthcare professionals point at the lack of formal training in the assessment of parent-infant relationships and the need for structured observational measures to assess the overall quality of the parent-infant relationship (Appleton et al., 2013; Beatty et al., 2011; Wilson et al., 2008). It is therefore critical "to adopt a developmental perspective to understand processes underlying the individual pathways to adaptive and maladaptive outcomes" (Bornstein et al., 2012, p. 113), when assessing the parent-infant relationship. Consequently, it seems of even greater importance to "systemize our impressions of the child's subjectivity" and create "sensitive measurement systems to identify changes that may go beyond symptomatic improvement" in order to assess risk in the parent-infant interaction, and define the need for intervention and measure, "the kind of changes that psychoanalytic therapy", such as psychoanalytic parent-infant psychotherapy, "aims to generate" (Fonagy, 2003, p. 133).

From a psychodynamic clinical point of view, the evaluation of the quality of the parent-infant relationship focuses on five needs. Firstly, the assessment of the overall quality of the parent-infant interaction. Second, the detection of sources of concern and risk factors within the parent-infant interaction to identify the need of therapeutic intervention, and third, to evaluate treatment outcomes. Fourth, it should adopt a

developmental perspective and fifth, offer a psychodynamic approach to parent-infant relationships based on assumptions about the unconscious processes underlying particular behaviours, and their subsequent impact on the infant's internal working model of the relationship. Finally, it should be applicable for use by health professionals from a variety of different training backgrounds and offer a shared language to reflect upon the quality of parent-infant relationships and areas of risk.

It follows, therefore, that an assessment tool should allow for qualitative ratings, rather than micro-analytic frequency or sequence analyses, to evaluate the overall quality of the parent-infant interaction. Ideally such a measure should be applicable within a variety of settings, such as direct or videotaped observation of non- or semi-structured interactions at play, with or without toys, in the consulting room or home environment. Such an observational assessment tool would facilitate understanding and maybe even sharing of a psychoanalytic perspective on the first, non-verbal and extremely complex language of emotional exchanges within the emerging relationship.

This overview of measures and methods provides the theoretical backdrop to describe the development of the Parent-Infant Relational Assessment Tool (PIRAT, Broughton & the Parent-Infant Project, 2003) in Chapter 4, further refinement of PIRAT in Chapter 5, and the development of PIRAT Global Scales (Broughton, Hommel, & the Parent-Infant Project, 2014b, 2016) in Chapter 6 of this thesis. For further overviews of measures assessing the parent-infant relationship see Sleded (2013), Sleded and Fonagy (2010), Sleded and Bland (2007) and Lotzin and colleagues (2015).

3. The Parent-Infant Relational Assessment Tool (PIRAT) Development and Preliminary Research

3.1. Introduction

Chapters 1 and 2 provide an overview of the theory and the measures relevant to evaluating the parent-infant relationship. The relation of the rich theoretical background of psychoanalytic thinking and empirical findings on the emergent parent-infant relationship reviewed in Chapter 1, and the overview of observational measures to assess the quality of the parent-infant relationship in Chapter 2 provide the theoretical framework for the development of a new measure, the Parent-Infant Relational Assessment Tool (PIRAT). This chapter gives an overview of the development of the Parent-Infant Relational Assessment Tool (PIRAT) and preliminary research into its reliability and validity.

The Parent-Infant Relational Assessment Tool (PIRAT) – Version 1.0 (Broughton & the Parent-Infant Project, 2003) was developed within the Parent-Infant Project (PIP) at the Anna Freud Centre (now the Anna Freud National Centre for Children and Families, or AFNCCF) in London. The Parent-Infant Project was set up in 1997 to support families where the infant is at risk of developmental disorders as a result of disturbance in the earliest attachment relationship. Many referrals are made by health professionals, some parents may self refer and most referrals are to do with the mother's psychiatric difficulties which impinge on her mothering, such as severe depression and anxiety, psychotic episodes and borderline personality disorder. Sometimes the problem is located in the relationship with the baby, such as 'not bonding', 'not loving the baby as much as one should', or within the relationship with the partner, which is having a negative impact on the emotional development of the baby. Some referrals are made because the baby is ill or disabled. The activities of PIP include clinical services, training and research (Baradon, 2005).

The PIP model is fundamentally a psychoanalytic model drawing on the work of pioneers in the field as reviewed in Chapter 1, such as Winnicott (1965), Bion (1962a), Fraiberg and her colleagues (1975) and many others, in understanding the unconscious and pre-conscious processes at work in the primary relationship and their contribution to the emerging sense of self of the baby (Beebe, 2000; Beebe & Lachman, 2003; Lyons-Ruth, 1998; Stern, 1985;). It offers a frame of reference for understanding experience and development in the parent and infant, their relationship with each other and their relationship with the therapist. This particular model of parent-infant psychotherapy has been manualised by Baradon and her colleagues (2005;

2016).

The need for and availability of specific interventions for parents and infants where there is developmental risk in the primary relationship raises the issue of early identification of difficulties within the emerging relationship and creates the need for a validated measure of early parent–infant interactions and a reliable risk assessment tool for use by professionals in the field.

The clinicians at the Parent-Infant Project team therefore developed PIRAT for their clinical use, based on their deep analytic understanding and knowledge about parent-infant psychotherapy as well as research, particularly the research to do with risk within the early relationship. They would have been very familiar with some theories, such as Freud's, Anna Freud's, Winnicott's, Bion's, Bowlby's, Stern's, Fraiberg's, Tronick & Gergely's, Beebe's, Schore's, Fonagy, Gergely, Jurist & Target's, Ainsworth's, Hesse & Main's and Lyons-Ruth's, to name the most important ones, and probably not as influenced by others reviewed in Chapter 1. Similarly they were familiar with some measures to assess the parent-infant relational quality, such as the Sensitivity Scales, the Emotional Availability Scales, the Coding Interactive Behavior, the CARE-Index, the FR coding system and the AMBIANCE, and not as familiar with other measures reviewed in Chapter 2.

Different from other observational measures which are based on systematic reviews of literature and/or empirical findings, PIRAT was derived from the PIP team's clinical expertise. It also includes descriptors of behaviours indicating relational risk drawn from the AMBIANCE (Manual - Version 1.0; Bronfman, Parsons, & Lyons-Ruth, 1992), and Main & Hesse's (1992) 'FR coding system', for details of both measures see Chapter 2. Table 3.1. gives an overview of the key features to observe and assess the dyadic parent-infant interaction, and infant's and parent's contribution to the relationship summarized in the end of Chapter 1, and PIRAT's infant-parent and parent-infant subscales.

Table 3.1. Comparison of relevant parental, infant behaviours and dyadic relational qualities from literature review in Chapter 1 and PIRAT infant-parent and parent-infant relational abilities and qualities – Part 1

| Literature Review | PIRAT | PIRAT Subscale |
|--|--|----------------|
| Parental Behaviours | Parent-Infant Interaction | p-i: 1 - 11 |
| gaze, eye contact, warm affective tone and modulation of the parental voice (known as 'motherese') | Parent's initiation of emotional contact | p-i: 2 |
| parental physical contact, closeness, handling and positioning of infant | Parent's initiation of physical contact | p-i: 1 |
| sensitivity, emotional attentiveness, responsiveness, reflective functioning | Parent's initiation of emotional contact | p-i: 2 |
| joint attention, stimulation, teaching, directiveness, demandingness, | Parent's initiation of emotional contact | p-i: 2 |
| structuring and controlling behaviours during interaction and play | Parent's playfulness in relation to infant | p-i: 3 |
| marked 'mirroring' and affect regulation of infants affect (containment of primary affects, arousal and negative feeling states) | Quality of contact: Intrusive/ Controlling | p-i: 6 |
| affect attunement, misattunement, and re-attunement the parent's ability to repair dyadic miscoordination (balance between 'mismatch' and 'repair') | Parent's initiation of emotional contact | p-i: 2 |
| predictability of parent's response | Parent's initiation of emotional contact | i-p: 2 |
| indicators of risk in themselves and therefore of importance when assessing the quality of the parent-infant relationship: | Quality of contact: Consistency/ Predictability | p-i: 11 |
| extremely insensitive, aggressive and intrusive maternal behaviours and parental representations, negative, age inappropriate and 'distorted' representations, withdrawal or role-reversal, disruptions without repair, intrusiveness, sexualized behaviour, dissociation, hostile/ helpless and frightening/ frightened states | Quality of contact: Hostility and blame | p-i: 5 |
| | Quality of contact: Intrusive/ Controlling | p-i: 6 |
| | Quality of contact: Avoidant | p-i: 10 |
| | Quality of contact: Sexualized | p-i: 8 |
| | Quality of contact: Dissociative | p-i: 9 |
| | Quality of contact: Frightening | p-i: 7 |
| | AND descriptors of PIRAT parent-infant subscales indicating risk, such as: | |
| n.a. | Parent's initiation of emotional contact | p-i: 2 |
| | Pleasure in parenting | p-i: 4 |
| Infant Behaviours | Infant-Parent Interaction | i-p: 1 – 12 |
| gaze or eye contact, vocalisation, talk | Infant's seeking of contact | i-p: 1 |
| attentiveness, responsiveness, cooperativity, reactivity and contingency, readiness to interact | Responsiveness to contact with parent | i-p: 2 |
| emotional contact and closeness | Infant's seeking of contact | i-p: 1 |
| | Responsiveness to contact with parent | i-p: 2 |
| physical contact and closeness | Infant's seeking of contact | i-p: 1 |
| | Responsiveness to contact with parent | i-p: 2 |
| mastery of anxiety, fear and loss in the infant when separated or reunited | Infant's seeking of contact | i-p: 1 |
| (seeking of contact, clinging, avoidance) | Ability to be comforted | i-p: 5 |
| ability to be soothed and to be able to resume exploration and play | Quality of contact: Clinging | i-p: 7 |
| reaction and contact to a stranger | Ability to be comforted | i-p: 5 |
| | Responsiveness to stranger | i-p: 3 |
| aggressive behaviour | Quality of contact: Aggressive/ Attacking OR Inhibition of aggression | i-p: 6 |

Table 3.1. Comparison of relevant parental, infant behaviours and dyadic relational qualities from literature review in Chapter 1 and PIRAT infant-parent and parent-infant relational abilities and qualities – Part 2

| Literature Review | PIRAT | PIRAT Subscale |
|---|--|-----------------------------|
| Infant Behaviours | Infant-Parent Interaction | i-p: 1 – 12 |
| specific behaviours indicating risk, such as overly passive, 'compulsive-compliant' (inhibited aggressive or fearful) behaviour or frightened behaviours, freezing, stilling, dissociation, avoidance, clinging, dissociation and disorganized behaviours, in particular avoidance coupled with expressions of strong distress, undirected, misdirected, incomplete or inter-rupted movements or expressions, asymmetrical movements, mistimed movements, anomalous postures, and slowed movement | Quality of contact: Aggressive/Attacking OR Inhibition of aggression | i-p: 6 |
| n.a. | Quality of contact: Frightened/Wary | i-p: 8 |
| n.a. | Quality of contact: Dissociative | i-p: 11 |
| n.a. | Quality of contact: Avoidant | i-p: 12 |
| n.a. | Quality of contact: Clinging | i-p: 7 |
| | AND descriptors of infant-parent subscales indicating risk, such as: | |
| | Infant's seeking of contact | i-p: 1 |
| | Responsiveness to contact with parent | i-p: 2 |
| | Ability to communicate needs | i-p: 4 |
| | Quality of contact: Lack of pleasure | i-p: 9 |
| | Quality of contact: Sexualized | i-p: 10 |
| Dyadic parent-infant interaction | Parent-Infant and Infant-Parent | p-i: 1 – 11 and i-p: 1 – 12 |
| 'patterns of mutual regulation' between mother and infant and synchrony of the interaction, such as the coordination of non-verbal behaviours (gaze, affect, vocalisations, body movements and indicators of arousal) attuned to one another through non-verbal and verbal communication | No specific PIRAT subscale for mutual regulation or synchrony but included in several descriptors of PIRAT subscales, such as: | |
| | Infant's seeking of contact | i-p: 1 |
| | Responsiveness to contact with parent | i-p: 2 |
| | Parent's initiation of emotional contact | p-i: 1 |
| | Parent's playfulness in relation to infant | p-i: 2 |
| | Pleasure in parenting | p-i: 4 |
| mutual influence of both the parent's and the infant's actions regulate those of the other | See above | |
| sensory and bodily aspects of the dyadic parent-infant interaction, such as the infant's body image, physical contact, closeness, touch | See above | |

A new measure assessing the dyadic parent-infant relationship, such as PIRAT, should provide a systematic and standardized observation of the behaviours and relational qualities listed in the left column of the above table. Interestingly, looking at the key implications for a new observational measure focusing on the dyadic parent-infant interaction, and infant's and parent's contribution to the relationship listed in the end of Chapter 1, these seem very similar to the infant-parent and parent-infant relational qualities included in PIRAT's subscales.

PIRAT "offers a systematic evidence-based assessment of the primary relationship and its difficulties, predicated on psychoanalytic understanding, attachment theory and

clinical research. One of the important and innovative aspects of our clinical assessment tool, PIRAT, is that the baby is incorporated as a vital co-constructor of the dyadic relationship and the evaluative process” (Broughton, 2014, p. 255). Therefore, PIRAT conceptualizes the parent-infant relationship as essentially dyadic, and does not differentiate between parental behaviours, infant behaviours and quality of the dyadic interaction, as many other observational measures described in Chapter 2 do. PIRAT strictly describes dyadic interactional contributions from the infant’s (infant-parent) and the parent’s (parent-infant) perspective, and therefore does not offer a separate coding scheme for the dyadic interaction to code the quality of mutual exchanges, attunement or synchrony. Moreover, different from most observational measures which focus on parental or maternal relational qualities first, PIRAT focuses on the infant’s contribution to the interaction and starts with observing the infant’s relational abilities and qualities before coding the parent-infant interaction.

As shown in table 3.1. PIRAT includes most of the observational qualities drawn from the literature review in the first chapter but not only organizes them differently, but also includes a few more specific qualities which seem important from a clinical perspective. The additional relational qualities include ‘Pleasure in parenting’ (p-i: 4) for the parent-infant interaction, and the ‘Ability to communicate needs’ (i-p: 4), ‘Lack of pleasure’ (i-p: 9), and ‘Sexualized’ behaviours in the infant (i-p: 10) for the infant-parent interaction.

The Parent-Infant Relational Assessment Tool (PIRAT) is grounded in clinical practice, having its genesis in the clinical work of the Parent-Infant Project at the Anna Freud Centre. The clinicians working in the PIP team and involved in the development of the initial coding scheme, the ‘Clinical Assessment Form’ (CAF; Parent-Infant Project, 1999, 2002) were Tessa Baradon, Carol Broughton, Iris Gibbs, Jessica James, Angela Joyce, and Inji Ralph. The initial reliability study on the CAF was carried out with the PIP team under the leadership of Dr Pam Davenport. Following that study the Parent-Infant Relational Assessment Tool (PIRAT) Manual - Version 1.0 was written by Dr Carol Broughton (Broughton & the Parent-Infant Project, 2003; see Appendix 3).

PIRAT was developed as a risk assessment tool for use by health professionals in the field of parent-infant psychotherapy, infant and perinatal mental health and infant development, such as GPs, health visitors and community nurses. It aims to identify parents and infants where the primary relationship is in difficulties as it appears in the consulting room, clinic or home environment. PIRAT seeks to facilitate the transfer of knowledge about infancy research and psychoanalytic theory about the early relationship into the wider professional milieu, and contribute to the process of formulating risk assessments. Such a tool needs to be flexible and reliable within a variety of settings, such as home visits and in the consulting room, and ideally suitable

for 'live' as well as videotaped observations (for details see introduction to PIRAT Manual – Version 2.0; Broughton, Hommel, & the Parent-Infant Project, 2012, in Chapter 4).

PIRAT is an observational measure that provides clear and concise descriptors for significant infant and parent behaviours in the emerging parent-infant relationship. It enables health professionals to rate observed dyadic relational qualities, rather than relying on parent's report about the perceived relationship, such as clinical interviews or questionnaires, and therefore reduces the bias in parental perceptions of infant behaviours and functioning (Broughton, 2014; Salomonsson & Sled, 2010).

The preliminary reliability and validation study was undertaken by Dr Carol Broughton and evaluated as part of a doctoral dissertation, entitled 'Measuring Parent-Infant Interaction: the Parent-Infant Relational Assessment Tool (PIRAT)' (Broughton, 2009). PIRAT was piloted in the field with a panel of health professionals to assess its reliability and validity study (Broughton, 2009, 2014). The results of that study indicated that PIRAT could be used as a risk assessment tool by health professionals in their workplace environment.

The PIRAT Manual - Version 1.0 was further refined between 2010 and 2012 by Dr Carol Broughton and the present author, and PIRAT Manual – Version 2.0 and 3.0 were developed (Broughton et al., 2012, 2014). For details see Chapter 4.

Following this development, PIRAT Global Scales were derived from PIRAT Manual - Version 3.0. The authors of the PIRAT Global Scales are Dr Carol Broughton, Susanne Hommel and the Parent-Infant Project (2014, 2016). PIRAT Global Scales will be introduced in Chapter 5.

3.2. Development of the Clinical Assessment Form (CAF)

The Clinical Assessment Form (CAF; Parent-Infant Project, 1999), the precursor of PIRAT, was developed by six psychoanalytic child or group psychotherapists of the Parent-Infant Project (PIP), under the auspices of Dr Pam Davenport and her research assistant, Miyabe Watanabe. Members of the PIP team identified common themes and dyadic behaviours that formed the basis of what constitutes difficulty in the parent-infant relationship in order to create a systematic evidence-based assessment of the primary relationship and its difficulties, predicated on psychoanalytic understanding, attachment theory and clinical research.

The clinicians observed particular dyadic behaviours during therapy sessions and rated the degree of concern: 'no concern', 'some concern', 'significant or severe concern'. In order to create an agreed and reliable way of coding observed behaviours, the clinicians provided definitions of what constituted 'no concern', 'some concern', and 'significant or severe concern' for each item on the list of dyadic behaviours.

CAF (as well as the later developed PIRAT Manual) includes items from the AMBIANCE (Bronfman, Parsons, & Lyons-Ruth, 1999), and Main & Hesse's (1992) coding instrument entitled 'Frightening, Frightened, Dissociated or Disorganized Behavior on the Part of the Parent: A Coding System for Parent-infant Interactions', as well as items from other available coding instruments assessing interactional behaviours/reactions and emotional states in infants and atypical and concerning maternal caregiving behaviours and emotional states (for details see Broughton, 2009). These behaviours constituting difficulty in the parent-infant relationship were separated into parent-infant behaviours and infant-parent behaviours, as the PIP team felt it was vital to accord the infant's behaviour towards the parent equal weight in their assessments.

Definitions of what constituted concern (0 = 'no concern', 1 = 'some concern', 2 = 'significant concern', 3 = 'severe concern') for each infant-parent and parent-infant behaviour on the scale resulted in a coding scheme summarized under the working title Clinical Assessment Form (CAF; Parent-Infant Project, 1999, 2002; for details see Broughton, 2009; Mann, 2001).

The Clinical Assessment Form (CAF) finally comprised 11 dyadic infant-parent behaviours:

1. Infant's seeking of contact
2. Responsiveness to contact
3. Responsiveness to therapist
4. Ability to communicate needs
5. Ability to be comforted

Quality of contact, such as:

6. Aggressive/Attacking
7. Clinging
8. Frightened/wary,
9. Lack of pleasure
10. Sexualized
11. Dissociative

And 8 parent-infant dyadic behaviours:

1. Parent's initiation of physical contact
2. Parent's initiation of emotional contact
3. Parent's playfulness in relation to infant
4. Pleasure in parenting
5. Hostility and blame

Quality of contact, such as:

6. Intrusive/Controlling
7. Frightening
8. Avoidant

During the process of coding 10-minute video-clips of therapeutic sessions with mothers and infants (0-36 months of age), coding scheme and coding decisions were conferenced. Revisions were made to the CAF Manual and the coding scheme was defined as 0 = 'no concern', 1 = 'concern', 2 = 'significant concern', merging the 2 and 3 category, as these two categories were often hard to differentiate. For the CAF Manual see Appendix 2.

3.3. Preliminary Reliability Study of CAF with Parent-Infant Project (PIP) Team

The preliminary reliability study was carried out under the research auspices of Dr Pam Davenport and Myriam Watanabe (for details see, Broughton, 2009). Six psychoanalytic child and/or group therapists of the PIP team refined the Clinical Assessment Form (CAF) during the process of coding ten minute video clips of therapeutic sessions with mothers and infants. In a second step inter-rater reliability (IRR) was evaluated.

Three randomly assigned pairs of therapists subsequently used the CAF Manual to code a variety of 10-minute video clips of mothers and infants individually and discussed their coding afterwards.

The sample was comprised of sixteen 10-minute video clips of mothers and infants (age: 0-36 months).

Internal consistency, inter-rater reliability, reliability of the group of raters and validity were calculated. CAF showed good Alpha coefficients ($\alpha = .89$ infant-parent and $\alpha = .85$ parent-infant) indicating good internal consistency between the items. Validity testing focused on construct validity using the Greenspan-Lieberman Observation System for Assessment of Caregiver-Infant Interaction During Semi-Structured Play (GLOS; Greenspan & Lieberman, 1989). Spearman's Rho CAF - GLOS analysis showed good to excellent results ($.55$ to $.75$, $p \leq .050$ and $.67$, $p \leq .001$ for parent-infant avoidant).

Inter-rater reliability (IRR) for pairs of coders was tested with fairly good levels of agreement (using Cohen's Kappa κ for the pair of coders, pair 1: $\kappa = .55$, pair 2: $\kappa = .57$, pair 3: $\kappa = .69$, all $p \leq .010$).

Group reliability for the 6 psychotherapists over 16 coding sessions was tested with 'good' to 'excellent' results (Intraclass Correlation Coefficient (ICC), ICC = $.64$ to $.94$, mean ICC = $.80$, $p \leq .010$).

3.4. Development of the Parent-Infant Relational Assessment Tool (PIRAT) Manual

The CAF Manual was substantially revised and rewritten following the preliminary reliability study as the Parent-Infant Relational Assessment Tool (PIRAT) – Version 1.0 by Dr Carol Broughton (Broughton & the Parent-Infant Project, 2003, see Appendix 3).

The following dyadic categories were amended or added:

Infant-parent: CAF category 3 'Responsiveness to therapist' was changed into 'Responsiveness to stranger'. A new infant-parent category was added: 'Quality of contact: avoidant' (category 12), and 3 new parent-infant categories were added:

- Quality of contact: sexualized (category 9),
- Quality of contact: dissociative (category 10),
- Quality of contact: consistency/predictability (category 11)

Later on these parent-infant categories were re-numbered into infant-parent and parent-infant subscales, as shown in PIRAT Manual – Version 1.0 (for details see Appendix 3).

Descriptors of several dyadic behaviours were also modified. This process is illustrated below using an example of original descriptors compared with revised descriptors.

'Responsiveness to contact with parent' significant concern:

Original items:

- Infant is frozen, stiffened, frightened, withdrawn in response to contact
- Infant does not use mother/father to regulate affect and resorts to self-regulation
- Infant over-relies on therapist or falls apart

Revised items:

- Infant is frozen, stiffened, frightened, noticeably cautious, or withdrawn in response to contact with parent.
- Infant does not use parent to regulate affect and resorts to self-regulation. For example, excessive hand and limb flapping in early months; restricted affect or reversal of affect as modes of defence, e.g. smiling when being teased and frustrated.

The revised manual leaves out 'over-relied on therapist or falls apart' as it is not appropriate for the health professional's manual. It adds examples of attempts to self regulate, e.g. hand flapping. It also includes the psychoanalytic concept of reversal of affect as an early pathological mode of defence (Fraiberg, 1987) and gives an example. For details see Broughton (2014).

Descriptors of several dyadic behaviours indicating risk, such as 'sexualized' or 'dissociative' were also modified. This is illustrated below for the infant-parent as well as the parent-infant interaction, and to show how CAF (original)/PIRAT (revised) conceptualize the rising level of concern for these indicators of relational risk:

Infant-Parent interaction: Quality of contact: sexualized

CAF, Infant-Parent interaction: Quality of contact: sexualized

0: no concern

Infant shows pleasure in bodily interactions with parent

There is no anxiety or overstimulation

1: some concern

Body boundaries between infant and parent in terms of soothing and stimulation appear confused.

2: significant concern

Infant's and / or parent's body is / are involved in stimulation and excitement of the other.

PIRAT – Version 1.0, Infant-Parent interaction: Quality of contact: sexualized

0: no concern

Infant shows pleasure in bodily interaction with parent. There is no anxiety or overstimulation.

1: some concern

Body boundaries between infant and parent in terms of soothing appear confused. Infant touches/ fondles parent's body without restriction.

2: significant concern

Infant's and/or parent's body is/are involved in stimulation and excitement of the other. For example, infant repeatedly caresses parent's face or body, including intimate parts, without inhibition. Infant relates in a seductive way with adults, e.g. touching, kissing, overly close physical contact. Infant appears overstimulated or overexcited. There is overt sexual presentation by infant.

Infant-Parent interaction: Quality of contact: dissociative

Dissociation is conceptualized as an indicator of relational risk in infant or parent which only occurs in emotionally highly stressful situations. It is defined as either observable or not, therefore 1: some concern is not applicable.

CAF, Infant-Parent interaction: Quality of contact: dissociative

0: no concern

Infant can soothe himself and play in the presence of parent.

In a potentially traumatic situation, infant either turns to parent or finds a strategy for soothing.

1: some concern

Not applicable

2: significant concern

Infant shows pervasive pattern of disconnecting from parent.

Infant displays extreme physical / emotional withdrawal from parent into states of self-stilling. This may be a fleeting or a pervasive pattern.

PIRAT – Version 1.0, Infant-Parent interaction: Quality of contact: dissociative

0: no concern

Infant can soothe him/herself in the presence of the parent. In a potentially traumatic situation, infant either turns to parent or finds a strategy for soothing.

1: some concern

Not applicable

2: significant concern

Infant shows pervasive pattern of disconnecting from parent. Infant displays extreme physical/emotional withdrawal from parent into states of self-stilling. This may be a fleeting or pervasive pattern. Infant may become excessively still, stare into space with a dazed expression, cut off from self, parent and environment.

Parent-Infant interaction: Quality of contact: sexualized

CAF, Parent-Infant interaction: Quality of contact: sexualized

0: no concern

Parent shows pleasure in bodily interactions with infant.

There is no anxiety or overstimulation.

1: some concern

Body boundaries between parent and infant in terms of soothing and stimulation appear confused.

2: significant concern

Parent's and / or infant's body is / are involved in stimulation and excitement of the other.

PIRAT – Version 1.0, Parent-Infant interaction: Quality of contact: sexualized

0: no concern

Parent shows pleasure in bodily interaction with infant and there is no anxiety or overstimulation. Parent tickles, cuddles or kisses infant in a light-hearted, appreciative manner.

1: some concern

Body boundaries between parent and infant in terms of soothing and stimulation appear confused. Parent behaves towards infant in a manner more appropriate to a partner, requesting physical attention from infant or caressing or frolicking with infant in an overstimulating manner. Parent continues to offer the breast in an unboundaried fashion, leaving her breasts constantly available to be touched and fondled.

2: significant concern

Parent's and/or infant's body is/are involved in stimulation and excitement of the other. Parent touches infant's body parts inappropriately. Parent encourages sexual behaviour in the infant towards him/herself.

Parent-Infant interaction: Quality of contact: dissociative

CAF, Parent-Infant interaction: Quality of contact: dissociative

0: no concern

In a highly stress, parent maintains awareness of others and the environment.

1: some concern

Not applicable

2: significant concern

Parent enters a state in which he / she is cut off from all others, infant and therapist.

PIRAT – Version 1.0, Parent-Infant interaction: Quality of contact: dissociative

0: no concern

In a highly stressful situation, parent maintains awareness of others and the environment.

1: some concern

Not applicable

2: significant concern

Parent enters a state in which he/she is cut off from infant and from all others. Parent exhibits stalling, with flattened affect, inexpressive face. Parent enters trance-like state, freezes, motionless, eyes unfocused, unresponsive to external world.

3.5. The Parent-Infant Relational Assessment Tool – Version 1.0

The Parent-Infant Relational Assessment Tool – Version 1.0 (Broughton & the Parent Infant Project, 2003) is comprised of two major scales, the Infant-Parent Scale (i-p) and the Parent-Infant Scale (p-i), each of them consisting of several subscales. PIRAT – Version 1.0 includes several new subscales compared to CAF. For a complete overview of PIRAT's subscales these are listed below. The subscales for the infant-parent interaction are: Infant-Parent Scale (i-p):

1. Infant's seeking of contact
2. Responsiveness to contact
3. Responsiveness to stranger
4. Ability to communicate needs
5. Ability to be comforted

Quality of contact, such as:

6. Aggressive/Attacking
7. Clinging
8. Frightened/Wary
9. Lack of pleasure
10. Sexualized
11. Dissociative
12. Avoidant

The subscales for the parent-infant interaction are: Parent-Infant Scale (p-i):

1. Parent's initiation of physical contact
2. Parent's initiation of emotional contact
3. Parent's playfulness in relation to infant
4. Pleasure in parenting
5. Hostility and blame

Quality of contact, such as:

6. Intrusive
7. Frightening
8. Sexualized
9. Dissociative
10. Avoidant
11. Consistency/Predictability

Each subscale is coded as '0: no concern', '1: moderate concern' and '2: severe concern'. For an overview see PIRAT Coding Sheet, Appendix 3.

Each scale pinpoints a different area of functioning and offers a qualitative description of the infant-parent and parent-infant interactions. Therefore, each subscale is coded separately and codings of '1: moderate concern' or '2: severe concern' indicate clinically relevant risk.

PIRAT can also be applied to 'live' or videotaped observation of 6 – 10 minutes of free play, with or without toys. There is no task for the parent and infant to fulfill apart from 'playing with each other as they are used to do'.

Coding a 10-minute clip usually takes 45 minutes for a trained and reliable PIRAT coder. Coding a 'live' observation might take longer, depending on the specific quality of the observed interaction and length of session

3.6. Preliminary Reliability Study with Health Professionals

A pilot study into the inter-rater reliability of this first version of PIRAT – Version 1.0 was conducted with a panel of health professionals. The preliminary reliability and validation study was undertaken by Dr Carol Broughton and evaluated as part of a dissertation, entitled 'Measuring Parent-Infant Interaction: the Parent-Infant Relational Assessment Tool (PIRAT)' (Broughton, 2009). It aimed to find out, whether:

1. Health professionals could be trained to use the PIRAT assessment tool, and
2. Reliability could be established among them, and therefore whether
3. PIRAT Manual - Version 1.0 (Broughton & the Parent-Infant Project, 2003) could meet the needs of health professionals,

PIRAT was piloted in the field with a panel of 10 health professionals (health visitors, midwives, clinical psychologists, speech and language therapists, child and family workers and a child protection social worker) working at a Sure Start Service in London. All professionals had attended the Infant Mental Health Module, a 3 months 1-day weekly training course at the Anna Freud Centre, to familiarize themselves with psychoanalytic thinking on the early parent-infant relationship, attachment, infancy research and common problems, such as regulatory disorders in infancy, parental perinatal psychiatric disorders leading to a need for intervention in infant mental healthcare settings. This group was trained by Carol Broughton using the PIRAT Manual – version 1.0 (Broughton & the Parent-Infant Project, 2003) over a time period of six sessions in order to establish consensus among the participants in relation to their understanding of PIRAT coding categories and manual definitions. 10-minute videotaped excerpts of mother-infant interactions from the Parent-Infant Project were rated no concern, some concern or significant concern. Discussion in order to explore the nature of difficulties and disagreements facilitated a shared understanding of the nature of the observed interactions and the use of the coding manual.

Each health professional subsequently videotaped a consultation with families (mothers and infants) in their workplace settings, either in the home or in the clinic.

The videotapes collected by the participants were randomly divided into 24 10-minute segments. 3 segments could not be used due to poor quality of the clip. 21 10-minute clips (infants' age from 1.5 to 24 months) were coded individually by ten participants using the PIRAT Manual – Version 1.0 (Broughton & the Parent-Infant Project, 2003). Circumstances and characteristics of the families were not shared within the group in order to maintain as much objectivity as possible.

Levels of agreement between raters were calculated, and participants were asked how much they felt that they learned about parent-infant interaction in general and in particular how to apply the coding scheme and its degree of usefulness in their professional work.

Inter-rater reliability (IRR) over all subscales was calculated by the overall percentage of acceptable agreement = 86.2% (acceptable agreement was considered to include 0 and 1, 1 and 2, but not 0 and 2 over all PIRAT subscales (21 clips x 23 subscales, N = 483). Group reliability was good to excellent (ICC = .53 to .94, mean ICC = .79, $p \leq .010$), calculated over 21 clips coded by 10 participants.

Several variables were identified as being problematic to code, such as parent-infant quality of contact: 'Intrusive/controlling' (11 out of 21 times), infant-parent quality of contact: 'Avoidant' (8/21 times), parent-infant quality of contact: 'Consistency/Predictability' (6/21 times), parent-infant quality of contact: 'Frightening' (6/21 times), infant-parent quality of contact: 'Frightened/Wary' (5/21 times). These categories were further examined. Coding disagreement focused on the particular degree of concern, and problems in finding a matching descriptor in the manual to the observed behaviour.

Results of this study indicated that PIRAT Manual – Version 1.0 could be used reliably as a risk assessment tool by health professionals in their working environment, but that the manual needed further refinement regarding the variables which were problematic to code.

Qualitative results showed that participants (and the researcher) enjoyed the training sessions, finding them stimulating and rewarding. Participants felt that they joined in a way of shared thinking about the parent-infant relationship and risk assessment, which became part of their working practice. One summarized: 'This training has given us a language to use amongst us – a common language in relation to parents and infants'.

3.7. Discussion of Preceding Reliability Research and Results

As the present thesis reports research to further establish reliability and validity of the Parent-Infant Relational Assessment Tool on a larger sample, it seems important to discuss the relevance of the findings from the preliminary research on validity and reliability.

The preliminary evaluation of the CAF Coding System (Mann, 2001) used the Greenspan-Lieberman Observation System for Assessment of Caregiver-Infant Interaction During Semi-Structured Play (GLOS; Greenspan & Lieberman, 1989) to evaluate CAF's construct validity, with poor results. Given that GLOS is a frequency count rating scale of parent-infant interaction, and few GLOS variables correspond to PIRAT variables, this could have been expected and it is not quite clear why GLOS was chosen to be the measure to evaluate CAF's construct validity with.

Another shortcoming of the preliminary studies arises from some missing information about the precise statistics, and which variant of that statistic was computed. It is not quite clear if members of the PIP team and health professionals of the Sure Start study were defined as a random sample of raters who are understood as being representative for CAF/PIRAT raters in general, as we do not know if ICCs were calculated adjusted (consistency/relative agreement) or unadjusted (absolute agreement), whether the variance of results was calculated one- or two-way, and if separate results were pooled when calculating ICCs for group reliability (Hallgren, 2012; Shrout & Fleiss, 1979). Furthermore, the definition of the level of agreement, such as considering acceptable agreement to include 0 and 1, 1 and 2, but not 0 and 2 is a less rigorous way of assessing IRR. This constitutes a different way of calculating IRR and will therefore not be comparable to the research findings described in the following chapters, as they calculated levels of absolute agreement.

The results of pair and group inter-rater reliability of the PIP team show very different levels of inter-rater reliability for the pairs of coders, as well as for some CAF categories. Given their longstanding team work in parent-infant psychotherapy and their shared professional background, the variety of IRR levels might be related to the actual quality of the clip, the limited range of interactional qualities across the clips used and the observed quality of the parent-infant interaction, as well as the descriptors in the CAF Manual. Unfortunately, these data have not been further analysed to explain the variance or detect measurement errors.

The evaluation of PIRAT's inter-rater reliability among the group of health professionals

from Sure Start using ICCs show quite a range of IRR levels, similar to the PIP Team, and again variance and measurement errors have not been further explored. Due to the fact that acceptable agreement was considered to include 0 and 1, 1 and 2 (but not 0 and 2), the differentiation between 'no concern' (0) vs. 'concern' (1, 2) was not tested. This is a less rigorous way of calculating IRR and will therefore not be comparable to the research findings described in the following chapters, as they calculated levels of absolute agreement.

Furthermore, the interpretation of results defining IRR of $\kappa = .55, .57, .69$ and ICC = .53 as 'good' seems not quite right since the literature focused on inter-rater reliability for observational measures clearly opts for a stricter test, defining 'good' levels of IRR as $\geq .60$ (Cicchetti, 1994; Landis & Koch, 1977).

The preceding studies into CAF's/PIRAT's reliability and validity (Broughton, 2009) showed fair to good levels of inter-rater reliability, good internal consistency and the sensitivity to pinpoint areas of concern. This indicates PIRAT's potential to become a reliable measure to observe the overall quality of the parent-infant relationship and to assess risk. PIRAT was able to be used both by psychoanalysts with extensive theoretical knowledge, well-trained observational skills and profound therapeutic experience in parent-infant psychotherapy, and by health professionals from very different professional backgrounds with varying levels of theoretical knowledge, observational training and professional experience.

The training of the healthcare professionals clearly increased their observational skills and established a common frame of reference for observing and coding (Bernardin & Buckley, 1981). The healthcare professionals individually rated the video clips of parent-infant interactions and noted the rationale for their ratings using the descriptors for each variable. Disagreements were conferenced creating a common frame of reference that mitigated against idiosyncratic scoring on the part of one or two raters. Barker, Barron, McFarland and Bigelow (1994) stress the importance of selection of highly motivated raters, their management and nurturing in order to foster the research alliance. This seemed well achieved as raters' views were taken seriously, they were encouraged to contribute to the refinement of the rating system, and felt part of the whole research process, analyses and interpretation. The evaluation by the health professionals involved stated that the PIRAT training expanded their theoretical knowledge and provided a shared language to think about the quality of the parent-infant relationship, and to observe and assess it in a variety of workplace settings.

Given that all participants of preliminary studies into PIRAT reliability and validity were either highly experienced psychotherapists or extensively trained health professionals, and much of the video data used came from a clinical background, future research needed to evaluate whether preliminary results could be at least replicated on the basis of a standardised 3-4 day reliability training and testing, using a variety of normative and clinical clips rated by coders from various professional backgrounds, blind to clinical/normative group.

Future PIRAT reliability and validity research, described hereafter, will therefore not only focus on the quality of the descriptors in the PIRAT Manual and further evaluation of the variables identified as 'being problematic to code', but also on the exploration of inter-rater reliabilities on subscale level.

Moreover, further research into PIRAT's validity should focus on different scales assessing the overall quality of the parent-infant relationship matching the variety of theoretical constructs PIRAT is comprised of, and establish PIRAT's construct validity.

The preliminary results have not yet established PIRAT's sensitivity for risk assessment, which therefore will be one of the main tasks for further research.

These considerations form the starting-point for the work to be described in the following chapters of this thesis.

4. Further Development of the Parent-Infant Relational Assessment Tool and Research into its Inter-rater Reliability

4.1. Introduction

PIRAT Manual - Version 1.0 (Broughton & the Parent-Infant Project, 2003) was further refined between 2010 and 2012 when introducing the manual to the present author (SH), including the process of Dr Carol Broughton (CB) training SH to reliability.

The video clips (6 minutes of free play) of mother-baby interactions used for that purpose included clips of clinical cases from the Parent-Infant Project (PIP) and clips of mothers and babies who dropped out of the Parent-Infant Psychotherapy Randomized Controlled Trial at the Anna Freud Centre (Fonagy, Slead, & Baradon, 2016). The PIP RCT study compares outcomes of parent-infant psychotherapy using the PIP Model (Baradon et al., 2005) with treatment as usual (TAU), and the sample comprises clinical cases at baseline, 6-months follow-up and 12-months follow-up, including infants from 0.5-24 months of age. The study included demographically diverse, urban populations with areas of high levels of socioeconomic deprivation, from three hospital-based perinatal psychiatry units and a community children's centre. Referrals to the study were made by health and social care professionals (e.g., health visitors, psychiatrists, and children's centre workers). Inclusion criteria were that the parent had been identified by a professional as requiring mental health services, the child was < 12 months of age, mothers met probable psychiatric case criteria based on the General Health Questionnaire (cut-off > 4/5 points; GHQ-12; Goldberg & Williams, 1988), and that mothers met at least one indicator of social exclusion, such as eligibility for income support, long-term unemployment (> 2 years), temporary or overcrowded accommodation (> 2 persons per room), were unmarried/single or had experienced recent relocation. This is clearly a clinical sample as mothers reported mental health problems and being in need of an intervention but not necessarily of qualifying for a psychiatric diagnosis. Exclusion criteria for the study were:

- non-English-speaking families
- current maternal psychosis
- substance-abuse disorders/chronic drug dependence
- maternal IQ < 70
- infants with any sensory or motor disability that would prevent their participation in a standard developmental assessment (e.g., blindness, hearing impairment, cerebral palsy).

The screening involved a semistructured interview with the mother, administration of the GHQ-12 (Goldberg & Williams, 1988), and the Test of Nonverbal Intelligence (TONI-3; Brown, Sherbenou, & Johnsen, 1997; for details see Fonagy et al., 2016).

The PIRAT Manual was amended during the process of coding several sets of video clips for research into inter-rater reliability. The changes to the PIRAT Manual are listed below before describing the development and process of the PIRAT reliability training and a pilot study into attaining inter-rater reliability with colleagues not involved in the revisions described.

The terminology used in Chapter 4 is consistent with that of PIRAT development and preliminary research described in Chapter 3: PIRAT Infant-Parent Scale and Parent-Infant Scale comprise several subscales (i-p 1-12 and p-i 1-11), and every subscale has anchor points, accompanied by descriptors of a range of behaviours illustrating the relevant level of concern.

4.2. Development of PIRAT Manual - Version 2.0

4.2.1. Method

Since replicability and precision of an observational rating are strongly influenced by the quality of the descriptors for a specific interactional behaviour or specific level of concern, it seemed important to further refine the PIRAT Manual - Version 1.0 (Broughton & the Parent-Infant Project, 2003). In particular, to evaluate the subscales and their descriptors identified as 'being problematic to code' and identify the disagreement over the particular degree of concern, and problems finding a matching descriptor in the manual.

4.2.1.1. Procedure

All clips were coded individually by CB and SH in 2011. Disagreement in coding results and problems in finding a matching descriptor for the observed quality of interaction were noted in detail and discussed.

4.2.1.2. Sample

The clips included a sample of 30 PIP and 30 PIP RCT normative and clinical drop-out cases from baseline and 6-months follow-up (infants' age: 0.5-22 months, mean age: 8.6 months, 30% normative and 70% clinical cases).

The PIP RCT sample consisted of 30 cases from baseline and 6-months follow up who dropped out of the PIP RCT Study. Table 4.1. illustrates the inclusion criteria of the PIP RCT Study. Children's mean age at baseline is six months, and mother's mean age is 29 years. The maternal General Health Questionnaire (Goldberg & Williams, 1988) conducted during the intake interview at baseline shows a mean score of 14, indicating a high level of psychiatric caseness in mothers.

Table 4.1. Age of child and mother and maternal mental health, PIP RCT sample (N = 30)

| | <i>M</i> | <i>SD</i> | Range |
|---------------|----------|-----------|---------------|
| Child | | | |
| Age (months) | 6.20 | 3.98 | 0.30 – 16.40 |
| Mother | | | |
| Age (years) | 28.74 | 4.89 | 19.20 – 40.50 |
| GHQ | 14.25 | 6.99 | 4.00 – 28.00 |

GHQ: General Health Questionnaire

Table 4.2. shows the characteristics of a fairly middle-class, married or partnered sample of mothers. 95% of mothers were referred to the PIP RCT study due to 'maternal mental health issues' (related to bereavement, trauma, childhood trauma) and only a few due to 'relationship and social difficulties' (such as domestic abuse, not bonding with baby, social isolation). Almost half of these mothers felt socially isolated. The sample included more boys than girls and most of them were the first child.

Table 4.2. Child and maternal characteristics, PIP RCT sample (N = 30)

| | n | % |
|---|-----------|------|
| Child | | |
| Gender | | |
| Male | 19 | 60 |
| Female | 11 | 40 |
| Ethnicity | | |
| White | 15 | 50 |
| Other | 15 | 50 |
| First child | 20 | 66 |
| Mother | | |
| Ethnicity | | |
| White | 14 | 48 |
| Other | 16 | 52 |
| Higher Education | 15 | 50 |
| Reason for Referral | | |
| Maternal mental health | 38 | 95 |
| Relationship/Social difficulties | 2 | 5 |
| Social Exclusion Criteria | | |
| Low-Income Household | 15 | 50 |
| Long-Term Unemployed | 12 | 40 |
| Temporary/Crowded Accommodation | 10 | 33 |
| Single-Parent Household | 15 | 50 |
| Chronic Illness or Physical Disability | 0 | 0 |
| Childhood Foster/Institutional Care | 0 | 0 |
| Social Isolation (Recent Relocation) | 20 | 67 |
| <20 Years of Age | 3 | 10 |
| Previous Diagnosis of Psychiatric Illness | 21 | 70 |
| <i>M</i> | <i>SD</i> | |
| Social Exclusion Criteria Met | 3.5 | 1.9 |
| <i>M</i> | <i>SD</i> | |
| Maternal Nonverbal IQ | 101.0 | 10.9 |

IQ: Intelligence quotient

Video clips of the PIP sample include PIP referrals from approximately 7 years of cases treated by therapists from the Parent Infant Project, the available data regarding maternal mental health and socioeconomic status etc. was very inconsistent. Referrals have to do with the mother's psychiatric difficulties which impinge on her mothering, such as severe depression and anxiety, psychotic episodes and borderline personality disorder, indicating a high level of psychiatric caseness in mothers. Sometimes the problem is located in the relationship with the baby, such as 'not bonding', 'not loving the baby as much as one should', or within the relationship with the partner, which is having a negative impact on the emotional development of the baby. Some referrals are made because the baby is ill or disabled. Table 4.3. and 4.4 illustrate the sample characteristics. The age of the PIP sample, children's mean age at baseline is four months, and mother's mean age is 31 years.

Table 4.3. Age of child and mother and maternal mental health, PIP sample (N = 30)

| | <i>M</i> | <i>SD</i> | Range |
|---------------|----------|-----------|---------------|
| Child | | | |
| Age (months) | 4.20 | 3.96 | 0.80 – 13.20 |
| Mother | | | |
| Age (years) | 30.88 | 8.76 | 20.50 – 43.50 |

Table 4.4. Child and maternal characteristics, PIP sample (N = 30)

| | <i>n</i> | % |
|---------------|----------|----|
| Child | | |
| Gender | | |
| Male | 20 | 67 |
| Female | 10 | 33 |
| Ethnicity | | |
| White | 10 | 50 |
| Other | 20 | 50 |
| First child | 22 | 73 |
| Mother | | |
| Ethnicity | | |
| White | 8 | 27 |
| Other | 22 | 73 |

4.2.2. Results

Changes to the PIRAT Manual aimed at a consistent structure and organisation providing for better readability, clearer differentiation of subscales and better usability, e.g. labels for each scale ('i-p' for infant-parent, 'p-i' for parent-infant), and consistency within the descriptors of each subscale to make sure that the coding system was ordinal rather than categorical, and to assure that the definition of descriptors captured a rising level of concern from a code of 0 to 2 regarding each specific quality of interaction. Changes included:

1. Structure and organisation of PIRAT Manual, achieving better readability, clearer differentiation of one subscale from the next, and better usability for training and research purposes. Therefore labels for each scale ('i-p' for infant-parent, 'p-i' for parent-infant) were included to differentiate infant-parent and parent-infant subscales from each other, and labels for each subscale (e.g. infant-parent: infant's seeking of contact 'i-p 1', parent-infant: parent's initiation of physical contact 'p-i 1', and so on) were included to shorten the long headings of each subscale into a label for each subscale which could be used for training and research purposes.

Infant-Parent Scale (i-p):

1. Infant's seeking of contact (i-p: 1)
2. Responsiveness to contact (i-p: 2)
3. Responsiveness to stranger (i-p: 3)
4. Ability to communicate needs (i-p: 4)
5. Ability to be comforted (i-p: 5)

Quality of contact, such as

6. Aggressive/Attacking (i-p: 6)
7. Clinging (i-p: 7)
8. Frightened/Wary (i-p: 8)
9. Lack of pleasure (i-p: 9)
10. Sexualized (i-p: 10)
11. Dissociative (i-p: 11)
12. Avoidant (i-p: 12)

Parent-Infant Scale (p-i):

1. Parent's initiation of physical contact (p-i: 1)
2. Parent's initiation of emotional contact (p-i: 2)
3. Parent's playfulness in relation to infant (p-i: 3)
4. Pleasure in parenting (p-i: 4)

| | | |
|-----|-----------------------------|-----------|
| 5. | Hostility and blame | (p-i: 5) |
| | Quality of contact, such as | |
| 6. | Intrusive | (p-i: 6) |
| 7. | Frightening | (p-i: 7) |
| 8. | Sexualized | (p-i: 8) |
| 9. | Dissociative | (p-i: 9) |
| 10. | Avoidant | (p-i: 10) |
| 11. | Consistency/Predictability | (p-i: 11) |

2. PIRAT Manual was checked for inconsistencies within the descriptors of each subscale to make sure that the coding system was ordinal and not categorical, and to ensure that the definition of descriptors captured a rising level of concern. The coding system which previously had been 0 = 'no concern', 1 = 'concern' and 2 = 'significant concern' was changed into 0 = 'no concern', 1 = 'some concern' and 2 = 'significant concern' to focus on the rising level of concern from 0 to 2 and follow a linear 3-point rating scale.

3. Infant-parent and parent-infant subscales describing the quality of contact 'Dissociative' (i-p: 11 and p-i: 9) were changed from a categorical 0 = 'no concern' or 2 = 'significant concern' rating into a linear rating of the level of dissociation to be consistent with other PIRAT subscales and the coding system in general. Therefore a new descriptor for 1 = 'some concern' was included, describing 'moments of disconnecting, withdrawal and self-stilling' for the infant-parent and 'fleeting moments of flattened affect, stilling, and being cut-off' for the parent-infant subscale.

4. The descriptors for 0 = 'no concern' for each subscale of the PIRAT Manual were systematically changed due to their failure to capture the absence of negative behaviours or indicators of risk. For example, i-p 5: 'Ability to be comforted' - 0 = 'no concern': 'infant allows parent to address her/his distress and the level of distress is reduced quite quickly in response to parent's actions...', this kind of descriptor repetitively caused a lot of disagreement, because raters did not know what to code when they did not observe any distress in the infant at all. This was a consistent problem within the descriptors for 0 = 'no concern' of almost every subscale, and in particular the infant-parent and parent-infant subscales about the quality of contact, especially the infant-parent responsiveness to stranger (i-p: 3), 'Aggressive/Attacking' (i-p: 6), 'Clinging' (i-p: 7), 'Frightened' (i-p: 8), 'Sexualized' (i-p: 10), and 'Dissociative' (i-p: 11) behaviours, and parent-infant 'Playfulness in relation to infant' (p-i: 3), 'Pleasure in parenting' (p-i: 4), 'Intrusive/Controlling' (p-i: 6), 'Frightening' (p-i: 7), 'Sexualized' (p-i: 8), and 'Dissociative' behaviours (i-p: 10).

Therefore, a first sentence was added to almost every descriptor for 0 = 'no concern' of each subscale for the absence of a negative or risk behaviour, such as 'there is no evidence of' the negative or risk behaviour. For the example given above: 'There is no evidence of discomfort or distress. Infant allows parent to address her/his distress and the level of distress is reduced quite quickly in response to parent's actions [...]'.

5. The descriptors of the subscales which repetitively caused disagreement either over the particular degree of concern, or due to problems finding a matching descriptor in the manual were discussed and refined, and in particular for the infant-parent 'Responsiveness to stranger' (i-p: 3), 'Aggressive/Attacking' (i-p: 6), 'Clinging' (i-p: 7), 'Frightened' (i-p: 8), 'Sexualized' (i-p: 10), and 'Dissociative' (i-p: 11) behaviours, and parent-infant 'Playfulness in relation to infant' (p-i: 3), 'Pleasure in parenting' (p-i: 4), 'Intrusive/Controlling' (p-i: 6), 'Frightening' (p-i: 7), 'Sexualized' (p-i: 8), and 'Dissociative' behaviours (i-p: 10).

6. The coding category of 0* = 'not seen' which had been used in the preliminary reliability study with health professionals was used during most of this inter-rater reliability training process, because it was found not to cause any problematic tendency to opt for a 0* coding whenever CB and SH weren't sure about a specific level of concern. However, it was finally deleted from the PIRAT coding system when discussing the final changes to the PIRAT Manual with the PIP Team, due to a systematic tendency to go for a 0* = 'not seen' coding whenever coders weren't sure about which descriptor to choose, or the specific level of concern.

7. A new coding sheet was designed, including an additional space for detailed notes on coding decisions, or problematic codings. For details see Appendix 4.

8. Coding instructions were included at the beginning of the PIRAT Manual, explaining the process of observing and coding a video clip, and how to take notes while coding. For details see Appendix 4.

9. An introduction into the development of PIRAT and its further refinement was added to the manual. For details see Appendix 4.

4.2.3. Discussion

These changes led to the development of PIRAT Manual - Version 2.0 (Broughton et al., 2012). Further research would need to explore the inter-rater reliability of PIRAT Manual – Version 2.0. on the basis of a standardised reliability training.

4.3. Development of the PIRAT Reliability Training

4.3.1. Introduction

A standardized training and process of testing reliability is a prerequisite of reliability, particularly inter-rater reliability of a measure. Most reliability-tested and validated measures used in clinical or research contexts described in Chapter 2 have standardized reliability training courses regarding training clips, a specific protocol for reliability testing on a number of clips displaying various qualities of interactions among an age range of infants/toddlers and a threshold for achieving inter-rater reliability.

The development of a standardised PIRAT reliability training therefore is the prerequisite for research into PIRAT's inter-rater reliability, as well as for further research into PIRAT's reliability and validity.

4.3.2. Training

The PIRAT reliability training comprised several modules:

- A. Introduction to the theoretical underpinnings and psychoanalytic thinking on the parent-infant relationship. In particular, the detailed description of the theoretical constructs conceptualised in PIRAT's infant-parent and parent-infant subscales. The introduction included a comprehensive reading list with several recommendations for reading in order to prepare for the training and several papers and book chapters to be read in parallel with the training, see Appendix 4.
- B. Introduction to the infant's development from birth to 2 years, in order to serve as a theoretical framework for the assessment of a particular parent-infant relationship, for details see Appendix 7.
- C. An overview of PIRAT's assessment of the quality of the parent-infant relationship, its general structure and introduction to the specifics of each PIRAT subscale, instructions for coding and the coding system.
- D. Introduction to coding and practice coding of video clips of parents, babies and toddlers from 0 – 2 years displaying various relational qualities included in the infant-parent and parent-infant subscales, as well as various levels of concern.

Instructions for coding were discussed in detail, and participants became familiar with using the PIRAT Manual by observing and rating a variety of normative and clinical video clips. The coding process during training was designed to progress from coding short examples of specific behaviours and levels of concern which were coded in the group and discussed in detail, up to coding of 6- to 10-minute clips individually and discussing the individual assessment with the group afterwards in order to establish consent. By the end of the 2.5-days participants were familiar with the coding process, and with note taking on the coding sheet.

4.3.3. Reliability Testing

The reliability testing process, comprising 1-day of reliability training, a reliability set of clips and a standardised process of testing reliability, was developed.

The reliability set included 30 clips of parent-infant interaction at free play from the Parent-Infant Psychotherapy RCT Study (PIP RCT) at the Anna Freud Centre (Fonagy et al., 2016) where parents consented for their videotaped interactions at play to be used for training purposes, see 5. of PIP RCT Consent Form included in Appendix 11. The set consisted of 21 clinical and 9 normative clips, infants' age ranged from 1 to 23 months (mean: 9.4 months), from a variety of cultural backgrounds. This reliability training set of clips was divided into 3 sets in order to calculate the level of IRR over the reliability training process after coding each set of clips (set 1, 2.1 and 2.2). Each set included 7 clinical and 3 normative clips

Each set of clips was coded by CB and SH using the PIRAT Manual - version 2.0 (Broughton et al., 2012) comprising 23 PIRAT subscales (12 infant-parent and 11 parent-infant). After each set of ten clips the raters compared and discussed their results. During the process of coding the 30 clips the level of agreement between CB and SH was reported by total percentage of agreement on subscale level. For details of statistics and results see 4.4.5. and 4.4.6. Disagreement in coding was identified and discussed, and those clips were watched together and re-coded in order to establish a 'gold standard' for each clip.

The clips used for reliability testing were uploaded to a secure, password protected Anna Freud Centre website, and access for streaming the video clips was provided to the participants who wanted to undertake reliability testing. Video clips were labelled

with their number within the reliability set and the age of the infant. A Confidentiality Agreement was created to ensure the confidentiality of the videotaped parent-infant interactions, see Appendix 8.

A further day of training was developed to receive participants' feedback on their experience of coding the first set of 10 clips, and discuss their codings in detail. This day was scheduled about 4 weeks after the initial training. Participants were asked to submit their codings on the first set of clips using an interactive coding sheet beforehand. Codings were then discussed in detail, so that participants could become aware of their individual strengths and shortcomings regarding their codings. Participants received the 'gold standard' codings of set 2.1. in order to provide them with feedback regarding their codings, before coding set 2.2.

This process of coding and feedback on codings was set up in order to achieve good levels of inter-rater reliability. Reliability was calculated using Intraclass Correlation Coefficients (ICC), with an estimate of 1 indicating 'perfect agreement' and 0 indicating 'no agreement'. Significance was defined by $p < .050$, and the threshold for a 'good' PIRAT inter-rater reliability compared to the 'gold standard' was defined by $ICC \geq .60$ for set 2.2. and over all clips following Cicchetti's (1994) widely used definition of a 'good' level of IRR.

4.4. A Pilot Study on Inter-rater Reliability of the Parent-Infant Relational Assessment Tool

4.4.1. Introduction

Following the lines of the preliminary research results into validity and reliability and the shortcomings discussed in Chapter 3, a pilot study into inter-rater reliability of PIRAT Manual - version 2.0 (Broughton et al., 2012) was developed. The pilot study aimed to evaluate if preliminary results on PIRAT's inter-rater reliability could be at least replicated on the basis of a 3.5-day short-course PIRAT reliability training, with a variety of normative and clinical clips rated by coders from different professional backgrounds being blind to group and details of the sample. Furthermore, this pilot study aimed to evaluate PIRAT's sensitivity for risk assessment, as well as focusing on the quality of the descriptors in the PIRAT Manual and further evaluation of the variables identified as 'being problematic to code'.

This section gives an overview of the pilot study into PIRAT reliability, in particular inter-rater reliability (IRR) on subscale level. The pilot study focused on the level of agreement between the PIRAT trainers (CB and SH) and 7 raters who were trained through a 3.5 days PIRAT reliability training. PIRAT Manual - Version 2.0 (Broughton et al., 2012) was used for the reliability training, for details see 4.3.

4.4.2. Method

This pilot PIRAT inter-rater reliability study aimed to estimate the reliability (IRR) on subscale level of:

1. The present author (SH) compared to CB.
2. Seven health professionals working with parents and infants compared to the 'gold standard' set by CB and SH.

4.4.2.1. Procedure

Each set of clips was coded by CB and SH using PIRAT Manual - Version 2.0 (Broughton et al., 2012). The process of establishing a 'gold standard' rating for each clip was described in 4.3.3.

Seven professionals (child and adolescent psychotherapists/analysts, adult psychotherapists/analysts, some trained as parent-infant psychotherapists, a child and adolescent psychiatrist, and a social worker, all of them experienced in working with parents and infants and observing parent- infant interactions; and two PhD students (clinical psychologists) not yet experienced in observing mothers and babies, were trained to use PIRAT in a 3.5 day reliability training, using PIRAT Manual – Version 2.0. Some participants had been trained in using other measures for parent-infant interaction and other assessment tools for parental reflective functioning or attachment representations.

After completing training, the seven PIRAT raters coded the three sets of video clips. After coding each set of clips, raters submitted their codings electronically on an interactive pdf-file including PIRAT coding sheet and coding notes for each subscale. Coding sheets were checked for missing data and in that case participants re-coded the clip. Raters received detailed feedback from CB and SH about their level of agreement, using total percentage of agreement compared to the 'gold standard' for the infant-parent and parent-infant scales. Disagreements with the 'gold standard' were discussed and problems in coding a specific interactional behaviour, finding the right descriptor, or deciding upon the observed level of concern in an infant-parent or parent-infant interaction were conferenced between CB or SH and each participant individually, before participants went on to code the next set of clips.

4.4.2.2. Sample

The sample comprised 30 clips of parent-infant interaction at free play from the Parent-Infant Psychotherapy RCT Study (PIP RCT) at the Anna Freud Centre, (Fonagy et al., 2016) described in 4.1. This sample consists out of 21 clinical and 9 normative clips, age range: 1-23 months, mean: 9.4 months, from a variety of cultural backgrounds. The normative sample of 9 clips matches the infant's age range of the clinical sample, infant's mean age is 9.1 months (SD = 6.8, range: 1-22 months). The sample characteristics of the clinical sample are shown below.

Table 4.5. illustrates the sample characteristics of the clinical sample. Children's mean age at baseline is nine months, and mother's mean age is 31 years. The maternal General Health Questionnaire (Goldberg & Williams, 1988) conducted during the intake interview at baseline shows a mean score of 14, indicating a high level of psychiatric caseness in mothers.

Table 4.5. Age of child and mother and maternal mental health (N = 21)

| | <i>M</i> | <i>SD</i> | Range |
|---------------|----------|-----------|---------------|
| Child | | | |
| Age (months) | 9.10 | 5.10 | 0.60 – 23.40 |
| Mother | | | |
| Age (years) | 31.20 | 5.95 | 21.10 – 41.40 |
| GHQ | 14.25 | 5.99 | 4.00 – 27.00 |

GHQ: General Health Questionnaire

Table 4.6. shows the characteristics of a fairly middle-class, married or partnered sample of mothers. 95% of mothers were referred to the PIP RCT study due to ‘maternal mental health issues’ (related to bereavement, trauma, childhood trauma) and only a few due to ‘relationship and social difficulties’ (such as domestic abuse, not bonding with baby, social isolation). Many mothers felt socially isolated. The sample included more boys than girls and most of them were the first child.

Table 4.6. Child and maternal characteristics (N = 21) – Part 1

| | n | % |
|----------------------------------|----|----|
| Child | | |
| Gender | | |
| Male | 14 | 67 |
| Female | 7 | 33 |
| Ethnicity | | |
| White | 9 | 43 |
| Other | 12 | 57 |
| First child | 14 | 67 |
| Mother | | |
| Ethnicity | | |
| White | 14 | 67 |
| Other | 7 | 33 |
| Higher Education | 12 | 57 |
| Reason for Referral | | |
| Maternal mental health | 20 | 95 |
| Relationship/Social difficulties | 1 | 5 |

Table 4.6. Child and maternal characteristics (N = 21) – Part 2

| | n | % |
|---|----------|-----------|
| Mother | | |
| Social Exclusion Criteria | | |
| Low-Income Household | 14 | 67 |
| Long-Term Unemployed | 7 | 33 |
| Temporary/Crowded Accommodation | 7 | 33 |
| Single-Parent Household | 9 | 43 |
| Chronic Illness or Physical Disability | 3 | 14 |
| Childhood Foster/Institutional Care | 0 | 0 |
| Social Isolation (Recent Relocation) | 7 | 33 |
| <20 Years of Age | 0 | 0 |
| Previous Diagnosis of Psychiatric Illness | 14 | 67 |
| | <i>M</i> | <i>SD</i> |
| Social Exclusion Criteria Met | 3.1 | 1.9 |
| | <i>M</i> | <i>SD</i> |
| Maternal Nonverbal IQ | 102.0 | 12.3 |

This PIRAT reliability training set of clips was divided into 3 sets in order to calculate the level of IRR over the reliability training process after coding each set of clips. Each set included 7 clinical and 3 normative clips (set 1, 2.1 and 2.2).

4.4.2.3. Statistics

The value of an assessment tool for the quality of parent-infant interaction can be expressed by its validity and reliability, in particular inter-rater reliability (IRR) for an observational measure, with replicability and precision being key issues. As Bartko & Carpenter (1976) advised it seems appropriate to limit the meaning of rater- and inter-rater reliability to agreement and therefore look at levels of agreement rather than consistency. Research on psychometric properties of an observational measure should quantify the degree of agreement between two or more coders, with relative and total agreement between two or more coders calculated to establish IRR. We aimed at 'good' levels of IRR between coders using PIRAT to observe the quality of parent-infant interactions.

Levels of agreement between the PIRAT trainers (CB and SH) were calculated on subscale level and are displayed by cross-tabulation tables, indicating mean score, standard deviations and frequency of each PIRAT code for each PIRAT subscale.

Proportional distribution of each code and percentage of agreement between CB and SH was calculated for every PIRAT subscale.

Coefficients to calculate inter-rater reliability share the underlying assumption that ratings from multiple coders for a set of subjects are composed of a true score component and measurement error component. Cohen's (1960) Kappa (κ) was used for assessing IRR for nominal variables, weighted Kappa (κ_w ; Cohen, 1988) was used for assessing ordinal variables between two raters. Possible values for Kappa statistics range from -1 to 1, with 1 indicating 'perfect agreement', 0 indicating completely random agreement, and -1 indicating 'perfect' disagreement', and to say that an observational measurement is reliable, one would expect at least a reliability coefficient of $\kappa = .61$ to $.80$ indicating 'substantial agreement', and $\kappa = .81$ to 1.0 indicating 'almost perfect or perfect agreement' for nominal or ordinal data and the agreement of two raters (Landis & Koch, 1977).

Intraclass Correlation Coefficients (ICC) are used to calculate IRR, with an estimate of 1 indicating 'perfect agreement' and 0 indicating 'no agreement'. Cicchetti (1994) provides commonly-cited cut-offs for quantitative ratings of agreement based on ICC values, with IRR being 'poor' for ICC values less than $.40$, 'fair' for values between $.40$ and $.59$, 'good' for values between $.60$ and $.74$, and 'excellent' for values between $.75$ and 1.0 . Therefore, the threshold for reliability for the clinical use of PIRAT was defined as $ICC \geq .60$, indicating 'good' levels of IRR.

A fully-crossed design was used to assess the systematic bias between coders (Hallgren, 2012), therefore all clips were coded by the same set of raters. The degree of relative and total agreement between two or more raters was calculated by using IBM SPSS Statistics 22 and a two way-random model, single case, consistency (relative level of agreement, adjusted) and absolute agreement (absolute level of agreement, unadjusted) calculation, to assure that raters provide scores which are similar to the absolute value (Field, 2013; Hallgren, 2012). Significance was defined by $p \leq .050$. Acceptable PIRAT inter-rater reliability compared to the 'gold standard' was defined by $\geq .60$ for set 2.2., and over all clips.

4.4.3. Results

IRR (level of absolute agreement) of CB and SH for the PIRAT infant-parent scale per video clip ranged from 58% - 100%, and from 36% - 100% for the parent-infant scale per clip. Total percentages of agreement for infant-parent and parent-infant scales per video clip ranged from 47% - 100%.

Looking at the cross-tabulation tables the level of inter-rater agreement between CB and SH was high, and mean infant-parent (mean CB from .00 - .67, standard deviation (SD) from .00 - .67, MW SH: .00 - .70, SD: .00 - .57), and parent-infant (mean CB from .00-.70, SD: .00-.70, mean SH: .00-.80, SD: .00-.80) between both raters were very similar. Some subscales were mostly coded '0' (i-p: 'Clinging' and 'Dissociative', and p-i: 'Dissociative'), some are coded only '0' and '1' (2x2 cross-tabulation tables) and about the same number of subscales are coded '0', '1' and '2' (2x3 cross-tabulation tables). In 5 clips out of 30 there is significant disagreement over 'no concern' and 'some/significant concern' in one or more subscales.

Table 4.7. includes the level of agreement between CB and SH, calculated by cross-tabulation tables and κ , or κ_w . IRR (level of absolute agreement) between CB and SH is 'fair' to 'excellent', mean percentage for agreement for infant-parent is 87% (range: 70% - 100%) and 85% for parent-infant (range: 70% - 100). Mean κ or κ_w for infant-parent is .72 (range: .44 - .90), .69 for parent-infant (range: .42 - .80), all being significant on $p \leq .050$.

Table 4.7. Level of agreement and IRR between CB and SH on subscale level, per scale and total (N = 30)

| | % of agreement | K _w |
|---|----------------|----------------|
| i-p: 1 Infant's seeking of contact | 83% | .66*** |
| i-p: 2 Responsiveness to contact with parent | 77% | .56*** |
| i-p: 3 Responsiveness to stranger | 93% | .63*** |
| i-p: 4 Ability to communicate needs | 80% | .63*** |
| i-p: 5 Ability to be comforted | 97% | .91*** |
| i-p: 6 Quality of contact: Aggressive/Attacking | 90% | .71*** |
| i-p: 7 Quality of contact: Clinging | 100% | n.a. |
| i-p: 8 Quality of contact: Frightened/wary | 83% | .59*** |
| i-p: 9 Quality of contact: Lack of pleasure | 70% | .44** |
| i-p: 10 Quality of contact: Sexualized | 100% | n.a. |
| i-p: 11 Quality of contact: Dissociative | 100% | n.a. |
| i-p: 12 Quality of contact: Avoidant | 70% | .50*** |
| p-i: 1 Parent's initiation of physical contact | 90% | .80*** |
| p-i: 2 Parent's initiation of emotional contact | 77% | .57*** |
| p-i: 3 Parent's playfulness in relation to infant | 83% | .71*** |
| p-i: 4 Pleasure in parenting | 87% | .73*** |
| p-i: 5 Hostility and blame | 83% | .67*** |
| p-i: 6 Quality of contact: Intrusive/controlling | 73% | .47* |
| p-i: 7 Quality of contact: Frightening | 93% | .79*** |
| p-i: 8 Quality of contact: Sexualized | 97% | .65*** |
| p-i: 9 Quality of contact: Dissociative | 100% | n.a. |
| p-i: 10 Quality of contact: Avoidant | 70% | .42** |
| p-i: 11 Quality of contact: Consistency/Predict. | 87% | .72*** |
| Mean infant-parent (i-p) | 87% | .72 |
| Mean parent-infant (p-i) | 85% | .69 |
| Mean total i-p and p-i | 86% | .71 |

K_w : Kappa weighted. *p ≤ .050. **p ≤ .010. ***p ≤ .001.

Table 4.8. shows the inter-rater reliability results for raters R1 to R7 of the pilot IRR study. IRR (Intraclass Correlation Coefficients (ICC)), for infant-parent scale, parent-infant scale and both scales (total) were calculated. The table shows the rising level of inter-rater reliability over the process of coding the reliability sets of clips.

Raters experienced in observing parent-infant interaction (R1 – R5) reached some 'fair', but mostly 'good' levels of inter-rater reliability (IRR over the reliability set of 30 clips: ICC = .35 - .69, and IRR for set 2.2.: ICC = .51 - .62., calculated using ICC, two-ways mixed, absolute agreement, SPSS 22) and demonstrated satisfactory inter-rater reliability after a 3.5 days PIRAT reliability training course. These raters' levels of IRR increased from set 1 to set 2.2, and the inter-rater reliability for R1 – R5 for set 2.2. was 'fair' to 'good' and demonstrated satisfactory inter-rater reliability. IRR levels for infant-parent, parent-infant and both scales for raters 1 – 5 increased from set 1 to set 2.2.

IRR levels of R6 and R7, the PhD students not experienced in observing mothers and infants interacting with each other, are quite a bit lower compared to R1 – R5, mostly not even in the 'fair' range and the coding results of R7 do not increase over the reliability training process. R6 and R7 gained 'poor' to 'good' results (ICC = .17 to .63, mostly not significant) after the 3.5 days PIRAT reliability training. Their levels of IRR did not increase over the period of the training and they did not differentiate between clinical and non-clinical cases reliably.

The difference in the levels of IRR between the group of professionals working with mothers and babies (R1 – R5) and the PhD students (R6 and R7) seems high and might be significant, but this cannot be statistically tested since the number of raters is too small.

In order to show the changing levels of inter-rater reliability over the reliability training and feedback process, results are listed for infant-parent and parent-infant for each set of clips and the IRR set of 30 clips in total.

Table 4.8. Inter-rater Reliability of raters 1 – 7 over the course of the training compared to the ‘gold standard’ (N = 30)

| | R1 | R2 | R3 | R4 | R5 | R6 | R7 |
|---------------|---------|------|-------|--------|--------|------|-------|
| Infant-Parent | | | | | | | |
| Set 1 | .67* | .24 | .12 | .48* | .58** | .11 | .35 |
| Set 2.1 | .69** | .10 | .58* | .50* | .62* | .23 | .40 |
| Set 2.2. | .58* | .56* | .64* | .44* | .53** | .63* | .30 |
| Parent-Infant | | | | | | | |
| Set 1 | .73** | .38 | .18* | .39* | .58* | .28 | .04 |
| Set 2.1. | .81*** | .24 | .64* | .39 | .76** | .47 | .77** |
| Set 2.2. | .34 | .61* | .47 | .59** | .49 | .55* | .17 |
| Total | | | | | | | |
| Set 1 | .73** | .31 | .15 | .41* | .61* | .18 | .22 |
| Set 2.1. | .79 *** | .18 | .63* | .43* | .72 ** | .39 | .60** |
| Set 2.2. | .51 | .62* | .62* | .51* | .59** | .63* | .25 |
| IRR set | | | | | | | |
| Infant-Parent | .65*** | .33* | .35** | .48*** | .58*** | .28 | .34* |
| Parent-Infant | .63*** | .38* | .33* | .42** | .63*** | .35* | .35* |
| Total | .69*** | .36* | .35** | .46** | .64*** | .31* | .36* |

R1: Psychoanalyst (A.J., PIP), R2: Child Psychiatrist (A.V.), R3: Clinical Psychologist (M.K.), R4: Psychoanalyst (S.K.), R5: Social Worker (A.F.), R6 and R7: PhD Students (Y.Z., P.T.), ICC, two-way mixed, absolute agreement, SPSS, version 22. *p ≤ .050. **p ≤ .010. ***p ≤ .001.

4.4.4. Discussion

The level of IRR for the PIRAT trainers (CB and SH) was analysed on subscale level to be able to identify subscales ‘being problematic to code’. IRR values for ‘Responsiveness to contact with parent (i-p: 2)’, ‘Quality of contact: Frightened/wary-(i-p: 8)’, ‘Lack of pleasure i-p: 9) and ‘Avoidant (i-p: 12) and ‘Parent’s initiation of emotional contact (p-i: 2)’, ‘Parent’s initiation of emotional contact (p-i: 6)’, ‘Quality of contact: Intrusive/controlling (p-i: 10) and ‘Avoidant (p-i: 11) were $\kappa_w < .60$, even when the level of IRR for the other subscales between CB and SH was ‘good’ to ‘excellent’. Looking into the coding notes of CB and SH for these subscales, disagreement was either caused by a different understanding of the quality of the interactional behaviour of very young infants (< 3 months), or by a different interpretation of maternal ‘Intrusive’ and ‘Frightening’ behaviours and the resulting level of concern.

Most participants of the first PIRAT inter-rater reliability training reached IRR ≥ .50 for set 2.2., and some met the threshold of ICC ≥ .60 for inter-rater reliability. Looking into the coding notes of raters 1 – 7, disagreement was mostly caused by problems in finding a matching descriptor for a subscale, in particular for the infant-parent

'Responsiveness to stranger' (i-p: 3), 'Aggressive/Attacking' (i-p: 6), 'Clinging' (i-p: 7), 'Frightened' (i-p: 8), and 'Dissociative' (i-p: 11) behaviours. And for parent-infant 'Playfulness in relation to infant' (p-i: 3), 'Pleasure in parenting' (p-i: 4), 'Intrusive/Controlling' (p-i: 6), 'Frightening' (p-i: 7), 'Sexualized' (p-i: 8), and 'Dissociative' behaviours (i-p: 10) and the resulting level of concern.

Disagreement in general seemed to be related to very young infants (< 3 months) and problems relating infant-parent relational quality to the parent-infant relational quality. Therefore some clips were coded very inconsistently, e.g. 'no concern' for infant-parent relational quality as opposed to 'severe concern' for parent-infant relational quality, which is usually a sign of coding errors. Some raters who were trained in using other measures to assess the quality of the parent-infant relationship reported problems in focusing their coding decisions to the exact PIRAT descriptor, in particular for those behaviours strongly related to other assessment tools, such as 'Responsiveness to stranger', 'Clinging', 'Intrusive/Controlling', 'Frightening/Frightened', 'Hostility' and 'Avoidant'. The descriptors of the subscales were still not optimal in the way they operationalized the underlying theoretical construct, and therefore repetitively caused disagreement over the particular degree of concern. The disagreement may also relate to too broad an age range of infants in this sample without specific age-related anchors included in the descriptors.

The group of raters discussed the clinical implications of their ratings of the infant-parent and parent-infant relationship, and how their codings on subscale level would translate into an overall level of concern. Questions such as 'what does it mean if half of the infant-parent/parent-infant subscales are coded '0' and the other half is coded '1'?', or 'what does a single '2' 'parent-infant sexualized' rating mean for overall '0'-ish levels of concern?' clearly showed the need for a way to calculate an overall level of concern, and develop a more global rating of the infant-parent and parent-infant relational quality. During the process of training as well as reliability testing, participants would therefore repeatedly ask for a global rating or a summarized total score for either the infant-parent or the parent-infant subscales, or the 23 subscale ratings altogether. The need for a rating of the global relational quality, such as a total score of the infant-parent and parent-infant relational quality, would be taken into account in the further development of PIRAT.

Although we hoped to establish that PIRAT can be used effectively by raters coming from very different professional backgrounds, it turned out to be overambitious to expect 'good' levels of IRR on the basis of a 3.5 days training for professionals without

any experience in observing parents and infants and pinpointing areas of concern. Both PhD students felt they lacked experience in observing mothers and babies interacting with each other and would have needed more training and much more knowledge about the theoretical background of each variable, in particular those indicating risk.

Results showed evidence that PIRAT could pinpoint areas of concern in the parent-infant relationship and become a reliable risk assessment tool when used by clinicians with a parent-infant mental health training background, but also indicated the need to further explore the shortcomings of PIRAT Manual – Version 2.0. Further amendments to the Manual would be needed in order to create a reliable measure to be used in clinical contexts.

While evaluating inter-rater reliability (IRR) was a first task for establishing the psychometric of an observational measure such as PIRAT, one has to keep in mind that 'an instrument may have good IRR but poor validity if coders' scores are highly similar and have a large shared variance but the instrument does not properly represent the construct it is intended to measure' (Hallgren, 2012, p. 24). Possible reasons for low IRR should therefore be further discussed. IRR may be low due to poor psychometric properties of the scale and its subscales, poorly trained coders, limitations of the quality of the video clips used for training and for reliability testing, difficulty in observing or quantifying the construct of interest, or other reasons compromising the 'gold standard' ratings used to establish IRR.

4.5. Development of PIRAT Manual – Version 3.0

4.5.1. Introduction

Results from the pilot study of inter-rater reliability of PIRAT Manual – Version 2.0 (Broughton et al., 2012) above showed evidence that PIRAT could pinpoint areas of concern in the parent-infant relationship and become a reliable risk assessment tool in clinical workplace contexts. However, results indicated the shortcomings of PIRAT Manual – Version 2.0, as participants mostly reached fair levels of IRR and only some participants became reliable. This section describes further amendments to the Manual, as well as to the coding system aiming at the improvement of inter-rater reliability. The refinement of PIRAT Manual – Version 2.0 (Broughton et al., 2012) led to the development of PIRAT Manual – Version 3.0 (Broughton et al., 2014a).

4.5.2. Method

Since replicability and precision of an observational rating are strongly influenced by the quality of the descriptors for a specific interactional behaviour or specific level of concern, it seemed important to further evaluate the subscales and their descriptors identified as 'being problematic to code'.

4.5.2.1. Procedure

The results for the level of IRR among the PIRAT trainers (CB and SH) on subscale level were analysed and subscales 'being problematic to code' were identified by IRR values for $\kappa_w < .60$. These subscales were further explored regarding their conceptualisation of the theoretical construct, the linear rising levels of concern from 0 to 2.

4.5.2.2. Sample

The same sample of video clips from the PIRAT reliability training set was used, for details see 4.4.3.

Table 4.9. Low level of agreement and IRR between CB and SH on subscale level, per scale and total (N = 30)

| | % of agreement | K _w |
|--|----------------|----------------|
| i-p: 2 Responsiveness to contact with parent | 77% | .56*** |
| i-p: 8 Quality of contact: Frightened/wary | 83% | .59*** |
| i-p: 9 Quality of contact: Lack of pleasure | 70% | .44** |
| i-p: 12 Quality of contact: Avoidant | 70% | .50*** |
| p-i: 2 Parent's initiation of emotional contact | 77% | .57*** |
| p-i: 6 Quality of contact: Intrusive/controlling | 73% | .47** |
| p-i: 10 Quality of contact: Avoidant | 70% | .42* |

K_w: Kappa weighted. *p ≤ .050. **p ≤ .010. ***p ≤ .001

Looking into the coding notes of raters 1 – 7 of the pilot study the subscales which caused most disagreement over the level of concern were identified, in particular infant-parent 'Responsiveness to stranger' (i-p: 3), 'Aggressive/Attacking' (i-p: 6), 'Clinging' (i-p: 7), 'Frightened' (i-p: 8), and 'Dissociative' (i-p: 11). And parent-infant 'Playfulness in relation to infant' (p-i: 3), 'Pleasure in parenting' (p-i: 4), 'Intrusive/Controlling' (p-i: 6), 'Frightening' (p-i: 7), 'Sexualized' (p-i: 8), and 'Dissociative' behaviours (i-p: 10).

The descriptors of those subscales which repetitively caused disagreement either over the particular degree of concern or due to problems finding a matching descriptor in the manual were discussed and refined.

And the need to translate the level of concern on subscale level of infant-parent or parent-infant behaviours into an overall level of concern, or a more global rating of the infant-parent and parent-infant relational quality, was discussed.

4.5.3. Results

Changes to the PIRAT Manual included:

1. Amendments to the descriptors of the subscales infant-parent 'Responsiveness to contact with parent' (i-p: 2), 'Responsiveness to stranger' (i-p: 3),

'Aggressive/Attacking' (i-p: 6), 'Clinging' (i-p: 7), 'Frightened/Wary' (i-p: 8), 'Lack of pleasure' (i-p: 9), 'Dissociative' (i-p: 11) and 'Avoidant' (i-p: 12), as well as to parent-infant subscales 'Parent's initiation of emotional contact' (p-i: 2), 'Playfulness in relation to infant' (p-i: 3), 'Pleasure in parenting' (p-i: 4), 'Parent's initiation of emotional contact' (p-i: 6), 'Intrusive/Controlling' (p-i: 10), 'Frightening' (p-i: 7), 'Sexualized' (p-i: 8), 'Dissociative' (i-p: 10) and 'Avoidant' (p-i: 11). These changes ensured that the definition of descriptors captured a rising level of concern from a code of 0 to 2 and offered a clearer differentiation between the specific levels of concern within one subscale.

For example, infant-parent 'Responsiveness to contact with parent' (i-p: 2) was changed from:

2: significant concern

Infant is frozen, stiffened, frightened, noticeably cautious or withdrawn in response to contact with parent.

Infant does not use parent to regulate affect and resorts to self-regulation. For example, excessive hand and limb flapping in early months; restricted affect or reversal of affect as modes of defence, e.g. smiling when being teased and frustrated

into:

2: severe concern

Infant persistently avoids eye contact with parent, or monitors parent indirectly and appears noticeably cautious or withdrawn in response to contact with parent.

Infant is frozen, stiffened or frightened.

Infant does not use parent to regulate affect and resorts to self-regulation. For example, excessive hand and limb flapping in early months; restricted affect or reversal of affect as modes of defence, e.g. smiling when being teased and frustrated

Subscale infant-parent 'Dissociative' (i-p: 11) was amended from:

0: no concern

Infant can soothe him/herself in the presence of the parent. In a potentially traumatic situation, infant either turns to parent or finds a strategy for soothing.

into:

0: no concern

There is no evidence of dissociative behaviour.

Infant can soothe him/herself in the presence of the parent. In a potentially traumatic situation, infant either turns to parent or finds a strategy for soothing.

2. A guideline for videotaping parent-infant interactions was included. This guideline for video-taping was created since the quality of the clip has an important impact on the ability to code an interaction adequately and, therefore, potentially on the level of IRR. For details of the guideline see Appendix 4.

3. Total scores summarizing infant-parent and parent-infant subscales were devised in order to provide a rating of the global relational quality. Total scores of the infant-parent and parent-infant relational quality were developed, to sum up the subscale codings of the infant-parent and parent-infant scales. Total scores can range from 0 – 24 (i-p), or 0 – 22 (p-i). In a second step, the total mean score of each subscale was calculated by dividing the total raw score of infant-parent and parent-infant by the number of subscales (12 subscales for i-p, and 11 subscales for p-i). The total mean score of each PIRAT subscale can range from 0 – 2 (no concern to severe concern) and gives an overall indication of the quality of either the infant-parent or the parent-infant relationship. The clinical cut-off point of each subscale was defined by a total mean score ≥ 2 . The calculation of total and total mean scores was included into the Coding Sheet, see Appendix 4.

Total scores and total mean scores allow for a comparison of the level of concern of the infant-parent and the parent-infant scale. Furthermore, they secure better comparability with other observational measures or psychometric tools assessing the quality of parent-infant interaction, and might be useful for the future development of clinical cut-off scores and for PIRAT's validation.

4. Final amendments, such as a rating scale of the overall relational quality were included in order to provide PIRAT users with an overall rating of the infant-parent and parent-infant relational quality on a 5-point rating scale. This rating of the relational quality aims an estimate of the overall infant-parent and parent-infant relational quality concluding the ratings of all i-p and p-i subscales. The scale allows for an assessment of the overall quality of the infant-parent and parent-infant relationship ranging from 'Very well attuned/ideal - no concern at all', 'Minor difficulties - no concern' to 'Disturbances in the relationship - some concern', 'Significant concern' and finally 'Severe concern'. For details see Appendix 4.

4.5.4. Discussion

Although PIRAT is essentially a clinical assessment tool that can be rated from 'live' observations or video-taped interactions, it holds the potential to be used as a reliable assessment of the infant-parent and parent-infant relational quality, and may be used as an outcome measure.

Results from the pilot study into PIRAT's inter-rater reliability showed evidence that PIRAT Manual – Version 2.0 was not yet conceptualised well enough to reach reliability among a group of healthcare professionals from a variety of training backgrounds, as most participants reached $IRR \geq .50$ for set 2.2., and only some met the IRR threshold of $ICC \geq .60$. The coding notes of raters 1 – 7 showed evidence that disagreement was in general related to very young infants (< 3 months), and often caused by problems in finding a matching descriptor for specific subscales.

Given these shortcomings, further amendments to the Manual, as well as to the coding system, aimed at the improvement of inter-rater reliability. The refinement of PIRAT Manual – Version 2.0 (Broughton et al., 2012) led to the development of PIRAT Manual – Version 3.0 (Broughton et al., 2014a)

In conclusion, PIRAT can be used reliably as an observational measure and a risk assessment tool to differentiate between normative and concerning relationship qualities on the basis of professional experience based on a 3.5 days reliability training. Participants do not yet consistently meet the threshold for IRR, which can be explained either by participants' professional experience, problems within the manual, or limitations within the training process, e.g. regarding the observation and assessment of very small babies. Furthermore, the findings showed evidence that PIRAT offers a shared language and understanding among health professionals of what constitutes risk and resilience.

However, further research will be needed to determine whether PIRAT can capture the global relational quality of the parent-infant relationship reliably, if it is sensitive to change and to assess PIRAT's reliability and validity on a large sample and in various populations.

5. The Parent-Infant Relational Assessment Tool – PIRAT Global Scales

5.1. Introduction

This chapter describes the development of the Parent-Infant Relational Assessment Tool (PIRAT) Global Scales (Broughton et al., version 1.0 and 2.0, 2014, 2016), and the pilot research into PIRAT Global Scales inter-rater reliability.

PIRAT Global Scales were developed following the findings from the pilot study into PIRAT's inter-rater reliability, which found evidence that PIRAT was not yet conceptualised well enough to reach reliability among a group of healthcare professionals from a variety of training backgrounds. This led to the development of PIRAT Manual – Version 3.0 (Broughton et al., 2014a). This final version of PIRAT took the need for a global assessment of the parent-infant relationship quality into account by adding total infant-parent scores and mean scores to the coding system, as well as a global rating scale for the overall quality of the infant-parent and parent-infant relational quality.

Consultations with several experts in the field of assessment of the parent-infant relationship, as well as experts in the field of measurement development, advised that PIRAT's 3-point scale would cause methodological problems for further exploration of the summarised total and mean scores. Most importantly, a simple summation of subscale ratings coded on a 3-point scale would not take the specific impact of those behaviours indicating risk into account. For example, parent-infant 'Sexualized' rated 2 'severe concern' would cause severe concern about the overall relational quality from a clinical point of view but would not have the proportionate impact on a summarised total or mean score. Consequently, subscales would need to be weighted, and an extensive amount of research would need to be done about how to weight specific behaviours included in PIRAT's subscales in order to come up with a balanced formula to adequately summarise subscales. These were problems that the addition of a 5-point global rating scale of the overall relational quality would not be able to solve. However, the addition of the 5-point global rating scale to PIRAT Manual – Version 3.0 and the experience of re-rating the PIRAT reliability training clips with this global rating, showed that the 5-point rating scale allowed for more variance of the ratings and a more precise differentiation of levels of concern. There were also statistical advantages of a 5-point as opposed to a 3-point scale, such as a wider range of levels of concern impacting on the comparability to other measures as well as the range of possible

statistical calculations. Following this experience in using the additional global scale and the experts' recommendations, it was decided to develop PIRAT Global Scales.

PIRAT Global Scales are a short version of the PIRAT. PIRAT Global Scales were developed to assess the overall dyadic quality of the Parent-Infant Relationship on two 5-point rating scales, the Infant-Parent Global Scale and the Parent-Infant Global Scale. They offer a time-efficient coding framework to observe and assess the dyadic quality of the parent-infant relationship on subscale level, as well as the assessment of the overall level of concern. They can be used as a risk assessment tool to differentiate between parent-infant interactions indicating 'no or minor concern' and those causing concern or indicating risk. PIRAT Global Scales consist of two major scales, the Infant-Parent Global Scale (I-P) and the Parent-Infant Global Scale (P-I). These global scales include observational descriptors of specific relational abilities and qualities delineated in PIRAT infant-parent subscales (i-p: 1-12) and parent-infant subscales (p-i: 1-11), see introduction and further development of PIRAT in Chapter 3 and 4.

The two major Global Scales comprise a 5-point scale ranging from '0 - No concern at all: very well attuned' to '4 – Severe concern: pervasive failures of attunement lead to severe disturbance in the relationship'.

The terminology used in Chapter 5 to 9 is consistent with that of PIRAT development and preliminary research described in Chapter 3 and 4: PIRAT Global Scales are comprised of the Infant-Parent Global Rating Scale and Parent-Infant Global Rating Scale, every Global Rating Scale comprises several subscales (i-p 1-12 and p-i 1-11), and every subscale has anchor points, accompanied by descriptors of a range of behaviours illustrating the relevant level of concern.

5.2. Development of PIRAT Global Scales

In a first step, five categories for levels of concern were developed by researching verbal qualifiers for rating scales, rating scale design and specific issues of scaling (Hofmans et al., 2007; Rohrmann, 2007; Wirtz & Caspar, 2002). Research on the 'intensity' of concern that these verbal qualifiers should reflect, found a scaling from 'no', to 'minimal', to 'moderate', to 'considerable' up to 'severe' appropriate.

In order to create the coding manual for the 5-point PIRAT Global Scales rating scale, infant-parent and parent-infant subscales contained in PIRAT Manual – Version 3.0 (2014) were revised and shortened by CB and SH following the 5 categories of PIRAT Global Scales levels of concern:

0. Infant-Parent and Parent-Infant 0 – 'No concern: very well attuned dyadic relationship'
1. Infant-Parent and Parent-Infant 1 – 'Minimal concern: minor difficulties in attunement, but 'good enough' overall relationship'
2. Infant-Parent and Parent-Infant 2 – 'Moderate concern: occasional failures of attunement lead to disturbance in the relationship, sufficient to warrant concern'
3. Infant-Parent and Parent-Infant 3 – 'Considerable concern: ongoing failures of attunement lead to significant disturbance in the relationship'
4. Infant-Parent and Parent-Infant 4 – 'Severe concern: pervasive failures of attunement lead to severe disturbance in the relationship'

These categories include anchor points for coding in relation to the specific level of concern. Coding the dyadic relational behaviours and interactional patterns of parents and infants accordingly should lead to one of the main categories of level of concern.

The re-arrangement of descriptors included in the infant-parent and parent-infant subscales into these 5 levels of concern focused on three major themes:

- Degree of observed dyadic attunement
- Frequency of behaviours indicating relational disturbance
- Severity of observed relational disturbance

This resulted in the Global Scales Manual – Version 1.0 consisting of an Infant-Parent and Parent-Infant Global Scales Rating, each of which comprised 5 levels of concern. These Global Scales include observational descriptors of specific relational abilities and qualities delineated in the PIRAT infant-parent subscales (i-p: 1-12) and parent-infant subscales (p-i: 1-11), see PIRAT Manual – Version 3.0 (Chapter 4 and Appendix 4). The two major global scales comprise a 5-point scale ranging from '0 - No concern at all: very well attuned' to '4 - Severe concern: pervasive failures of attunement lead to severe disturbance in the relationship'. The cut-off score for concerning relational

qualities is theoretically defined as '2', indicating disturbances in the relationship likely to warrant clinical concern. The development of a clinically validated cut-off score will be the subject of future research.

In order to make PIRAT Global Scales more comparable to other coding systems and to offer clinicians overall information about the quality of the infant-parent and parent-infant relationship, a mean Global Scales Score was developed. This mean Global Scales Score was created by adding up the codings of the Infant-Parent and Parent-Infant Global Scales Rating from 0 – 4 and dividing it by two. The mean Global Scales Score can range from 0 – 4 (no concern to severe concern) and gives an overall indication of the quality of the relationship of parent and infant.

PIRAT Global Scales are stand-alone scales, which can be used as an assessment tool in their own right. PIRAT Global Scales Manual – Version 1.0 was tested by re-coding the clips used for PIRAT training by the present author and CB. Their reliability and validity needs to be further explored.

For an overview of PIRAT Global Scales see the Coding Sheet:

| Infant-Parent Global Scale | | | | | | Please tick box |
|---|-------|--------|--------|----------|----------|-----------------|
| 'No concern: very well attuned dyadic relationship' | | | | | | 0 |
| Minimal concern: minor difficulties in attunement, but 'good enough' overall relationship' | | | | | | 1 |
| Moderate concern: occasional failures of attunement lead to disturbance in the relationship, sufficient to warrant concern' | | | | | | 2 |
| Considerable concern: ongoing failures of attunement lead to significant disturbance in the relationship' | | | | | | |
| Severe concern: pervasive failures of attunement lead to severe disturbance in the relationship' | | | | | | 4 |
| Notes: | | | | | | |
| Please tick box: I am ... confident of my coding: | fully | mostly | fairly | somewhat | slightly | not at all |
| | 5 | 4 | 3 | 2 | 1 | 0 |

| Parent-Infant Global Scale | | | | | | Please tick box |
|---|-------|--------|--------|----------|----------|-----------------|
| 'No concern: very well attuned dyadic relationship' | | | | | | 0 |
| Minimal concern: minor difficulties in attunement, but 'good enough' overall relationship' | | | | | | 1 |
| Moderate concern: occasional failures of attunement lead to disturbance in the relationship, sufficient to warrant concern' | | | | | | 2 |
| Considerable concern: ongoing failures of attunement lead to significant disturbance in the relationship' | | | | | | |
| Severe concern: pervasive failures of attunement lead to severe disturbance in the relationship' | | | | | | 4 |
| Notes: | | | | | | |
| Please tick box: I am ... confident of my coding: | fully | mostly | fairly | somewhat | slightly | not at all |
| | 5 | 4 | 3 | 2 | 1 | 0 |

| | | | | | | |
|------------|-----|---|-----|---|-----|--------------|
| Mean score | i-p | + | p-i | = | sum | divided by 2 |
|------------|-----|---|-----|---|-----|--------------|

5.3. A Pilot Study into Inter-rater Reliability of the Parent-Infant Relational Assessment Tool - PIRAT Global Scales

5.3.1. Method

This pilot study seeks to evaluate PIRAT Global Scales' – Version 1.0 inter-rater reliability (IRR) on the basis of a 3.5 day short-course PIRAT Global Scales reliability training, with a variety of normative and clinical clips coded by raters from different professional backgrounds who were blind to the group and to the details of the sample. It followed the method of the reliability study reported in the previous Chapter and evaluated:

1. Inter-rater reliability of CB and SH
2. Inter-rater reliability of health professionals working with parents and infants, based on the 3.5-days PIRAT reliability training.

5.3.1.1. Procedure

The reliability training set of 30 clips was divided into 3 sets of 10 clips, for details see Chapter 4. Each set of clips was coded using PIRAT Global Scales 1.0 (2014), first of all on subscale-level (infant-parent (i-p: 1-12) and parent-infant (p-i: 1-11)), and secondly on Global Scales level (Infant-Parent and Parent-Infant Global Scales Rating) by CB and SH. The inter-rater reliability of CB and SH was calculated for the Infant-Parent and Parent-Infant Global Scales Rating. Disagreements in ratings were identified, and those clips were re-coded in order to establish a 'gold standard' for each clip.

Seven professionals (two child and adolescent psychotherapists/analysts, two adult psychotherapists (analyst/group analyst), a psychiatrist, and two social workers, some of them trained as parent-infant psychotherapists and all of them experienced in working with parents and infants and observing parent- infant interactions, were trained to use PIRAT Global Scales Manual – Version 1.0 on a 3.5 days reliability training. Each set of clips was coded individually, ratings were discussed and detailed feedback was given before coding the next set of clips.

5.3.1.2. Sample

The sample of clips used for this pilot study was the same sample of 30 clips of parent-infant interaction at free play from the Parent-Infant Psychotherapy RCT Study (PIP RCT) (Fonagy et al., 2016) used for reliability testing, for details see Chapter 4 (4.1.).

The sample of PIRAT Global Scales coders comprised 7 professionals who did not have any previous experience in coding PIRAT or Global Scales.

5.3.1.3. Statistics

The statistics used to establish the inter-rater reliability of PIRAT Global Scales – Version 1.0 were similar to those described in Chapter 4 and Chapter 6 (for details see 4.4.5. and 6.2.4.). However, this pilot study focused on absolute agreement on the 5-point rating scale of PIRAT Global Scales and therefore calculated Intraclass Correlation Coefficients (ICC), which offer more information and allow for more calculations when compared to Kappa Weighted (for single raters) or Kappa Fleiss (for a group of raters) (Shrout & Fleiss, 1979; Wirtz & Caspar, 2002). The degree of absolute agreement between seven raters to the ‘gold standard’ was calculated using a two way-mixed model (IBM SPSS Statistics 22), using Cicchetti’s (1994) commonly cited cut-offs.

Statistical significance was defined at $p \leq .050$, two-tailed per test. And acceptable PIRAT inter-rater reliability compared to the ‘gold standard’ was defined by $ICC \geq .60$ over all clips.

5.3.2. Results

Inter-rater reliability IRR (level of absolute agreement) between CB and SH was ‘excellent’, Infant-Parent Global Rating $ICC = .91$ ($p \leq .001$), Parent-Infant Global Rating $ICC = .90$ ($p \leq .001$; ICC, two-way mixed, absolute agreement, calculated using SPSS, version 22). IRR results for CB and SH were similarly excellent, see Table 5.1.

Table 5.1. Level of agreement and IRR between CB and SH for infant-parent and parent-infant (N = 30)

| | ICC PIRAT | ICC PIRAT Global Scales |
|-------------------|-----------|-------------------------|
| Infant-Parent i-p | .91*** | .91*** |
| Parent-Infant p-i | .90*** | .90*** |

ICC, two-way mixed, absolute agreement, SPSS, version 22. *** $p \leq .001$.

Inter-rater reliability IRR of health professionals working with parents and infants, based on a 2.5 day PIRAT Global Scales course, plus 1 day of feedback and discussion of codings on set 1, was 'fair' to 'excellent', as shown in Table 5.2.

IRR for Infant-Parent Global Rating ranged from ICC = .46 ($p \leq .010$) to .77 ($p \leq .001$). IRR for Parent-Infant Global Rating ranged from ICC = .48 ($p \leq .010$) to .75 ($p \leq .001$); ICC, two-way mixed, absolute agreement, calculated using SPSS, version 22).

Raters 1-7 also differentiated reliably between clinical and normative clips.

Table 5.2. Inter-rater Reliability of raters 1-7 compared to the 'gold standard' for PIRAT Global Scales (N = 30)

| | R1 | R2 | R3 | R4 | R5 | R6 | R7 |
|---------------|--------|--------|--------|--------|--------|--------|--------|
| Infant-Parent | .65*** | .46** | .58*** | .70*** | .56*** | .62*** | .77*** |
| Parent-Infant | .63*** | .56*** | .55*** | .48** | .68*** | .61*** | .75*** |

R1 - R7: raters 1-7 (Infant Mental Health or Parent-Infant specialists, such as psychiatrists, social workers, health visitors, psychotherapists). ICC, two-way mixed, absolute agreement, SPSS, version 22. ** $p \leq .010$. *** $p \leq .001$.

As expected, all raters achieved higher levels of inter-rater reliability on PIRAT Global Scales compared to IRR of raters on the PIRAT Manual – Version 2.0, coding the same set of video clips. For comparison, Table 5.3. shows the IRR for PIRAT Manual – Version 2.0 ratings of infant-parent and parent-infant subscales over the same set of clips.

Table 5.3. Inter-rater Reliability of raters 1-7 compared to the 'gold standard' for PIRAT 2.0 (N = 30)

| | R1 | R2 | R3 | R4 | R5 | R6 | R7 |
|---------------|--------|------|-------|--------|--------|------|------|
| Infant-Parent | .65*** | .33* | .35** | .48*** | .58*** | .28 | .34* |
| Parent-Infant | .63*** | .38* | .33* | .42** | .63*** | .35* | .35* |

R1: Psychoanalyst (A.J.), R2: Child Psychiatrist (A.V.), R3: Clinical Psychologist (M.K.), R4: Psychoanalyst (S.K.), R5: Social Worker (A.F.), R6 and R7: PhD Students (Y.Z., P.T.), ICC, two-way mixed, absolute agreement, SPSS, version 22. * $p \leq .050$. ** $p \leq .010$. *** $p \leq .001$.

5.3.3. Discussion

As expected, given the longstanding joint work on PIRAT's development, the level of IRR for PIRAT Global Scales – Version 1.0 between CB and SH analysed for Infant-Parent and Parent-Infant Global Ratings showed excellent levels of IRR.

Almost all participants of the first PIRAT Global Scales reliability training reached levels of $IRR \geq .50$ for Infant-Parent and Parent-Infant Global Rating. Several met the threshold of $ICC \geq .60$ for inter-rater reliability. Interestingly, all raters achieve higher levels of inter-rater reliability on PIRAT Global Scales compared to raters on PIRAT Manual – Version 2.0 coding the same set of video clips, even when the infant-parent and parent-infant subscale ratings of PIRAT 3.0 are not exactly comparable with the newly developed Infant-Parent and Parent-Infant Global Ratings.

Feedback at the end of the training, as well as participants' notes on coding, clearly communicated their appreciation of the 2-step coding process from specific relational qualities to the rating of the global relational quality. Vice-versa, their use of their observations and ratings at subscale level were helpful whenever they experienced problems in assessing the global relational quality. Furthermore, the findings provided evidence that PIRAT Global Scales offer a shared language and understanding among health professionals of how specific indicators of risk and resilience were impacting on the overall quality of parent-infant relationship.

Looking into the coding notes of raters 1 – 7, disagreement was mostly caused by a different understanding of the quality of the interactional behaviour of very young infants (< 3 months), or by intercultural differences in maternal behaviours, in particular 'Intrusive/Controlling', 'Frightening/Frightened', 'Hostility' and 'Avoidant' and the resulting level of concern.

Consistent with our findings from the evaluation of the inter-rater reliability of PIRAT, some disagreement seemed to be caused by problems relating infant-parent relational quality to the parent-infant relational quality. Again, some clips were coded very inconsistently, e.g. 'no concern' for infant-parent relational quality as opposed to 'severe concern' for parent-infant relational quality, which indicates coding errors given the intrinsically dyadic nature of Infant-Parent and Parent-Infant Global Ratings.

Although we hoped to show that PIRAT Global Scales could be used reliably by raters from different professional backgrounds, it turned out to be overambitious to expect 'good' levels of IRR among a group of 7 professionals on the basis of a 3.5 days training. Participants do not yet consistently meet the threshold for IRR, which can be explained either by limitations of the manual, participants' professional experience, or limitations within the training process, e.g. regarding the observation and assessment of very small babies, and the quality of the video clips, or a combination of these factors.

Apart from reasons related to the manual, which will be subject to further development, participants' feedback suggested that some professionals were not experienced

enough to reliably assess the overall relational quality. They would either be very identified with the infant or mother and therefore rate the relational quality solely from that perspective, or had problems adapting to the coding system and sticking strictly to the descriptors in the manual and instead use their own interpretations of what was going on within the dyadic interaction. Furthermore, feedback suggested some participants felt they lacked experience in observing mothers and very young babies interacting with each other and that they would have wanted more training in observing specifically very small infants, in particular behaviours indicating relational risk.

PIRAT Global Scales are essentially a clinical assessment tool providing a reliable framework for assessing a range of specific infant-parent and parent-infant relational qualities, as well as the global quality of the infant-parent and parent-infant relationship. Although the results discussed above show it holds the potential to be used for reliable assessment of the infant-parent and parent-infant relational quality, there is evidence that PIRAT Global Scales Manual – Version 1.0 was not yet conceptualised well enough to reach reliability among a group of healthcare professionals.

5.4. Development of PIRAT Global Scales Manual - Version 2.0

5.4.1. Introduction

Given the shortcomings of PIRAT Global Scales Manual – Version 1.0 described in 5.3., further amendments to the manual, as well as to the coding system aimed at the improvement of its reliability. This refinement, described below, led to the development of PIRAT Global Scales Manual – Version 2.0 (Broughton et al., 2016) and the Addendum for Coding (Hommel, Broughton, & the Parent-Infant Project, 2016). Moreover, the reliability training was amended in order to take participants' feedback into account.

5.4.2. Procedure

Codings, in particular notes from coding of CB, SH and the 7 raters and their feedback from the pilot study into PIRAT Global Scales inter-rater reliability were revisited in order to develop further the PIRAT Global Scales Manual and the training process.

5.4.3. Results

This led to the development of changes both in PIRAT Global Scales training and the PIRAT Global Scales Manual – version 2.0 (Broughton et al., 2016).

Changes to the Manual

1. Consistent with our findings from the evaluation of the inter-rater reliability of PIRAT 2.0, some disagreement seemed to be caused by problems relating infant-parent relational quality to the parent-infant relational quality. Again, some clips were coded very inconsistently, e.g. 'no concern' for infant-parent relational quality as opposed to 'severe concern' for parent-infant relational quality, which indicates coding errors given the intrinsically dyadic nature of Infant-Parent and Parent-Infant Global Ratings.

An Addendum for Coding (Hommel et al., 2016) was developed in order to give an overview of the rising level of concern within one subscale of the Infant-Parent (i-p: 1-12) and Parent-Infant (p-i: 1-11) Global Rating Scale. For example: Whereas 'Infant's seeking of contact' (i-p: 1) is one aspect of each level of concern from 0 – 4 for the

Infant-Parent Global Rating Scale in the PIRAT Global Scales Manual, the Addendum for Coding summarizes the rising level of concern within 'Infant's seeking of contact', in order to give an overview of levels of concern regarding the infant's behaviour in this category. For example:

Infant-Parent

| i-p 1 | Infant's seeking of contact |
|--------------|---|
| 0 | Infant actively looks for contact with parent, uses parent to regulate affect and behaviour and uses parent as a secure base and source of comfort. |
| 1 | Infant is occasionally slow to refer to parent but overall this is not characteristic of the relationship. |
| 2 | Infant may sometimes seem slow to refer to parent where contact would be expected OR infant's mode of making contact is sometimes distressing, e.g. pulling at parent, crying and throwing things. |
| 3 | Infant seems more self-sufficient than would be expected, e.g. too quiet undemanding baby or infant who rarely returns to touch base or look for comfort even when distressed OR infant seeks contact predominantly around negative emotions. |
| 4 | Infant cannot use parent to regulate affect and habitually resorts to self-regulation. |

In order to show the of the rising level of concern of indicators of risk for the infant-parent and parent-infant domain, see 'sexualized' and 'dissociative' below:

Infant-Parent

| i-p 10 | Quality of contact: Sexualized |
|---------------|--|
| 0 | There is no indication of sexualized behaviour. |
| 1 | Bodily interaction with parent might appear overstimulated but there is no evidence of overt sexualized behaviours. |
| 2 | Body boundaries between infant and parent in terms of soothing may appear confused in a way that is not age appropriate. Further evidence is required. |
| 3 | Infant touches/fondles/grabs intimate parts of parent's body in an unboundaried and uninhibited way. |
| 4 | Infant's and/or parent's body is/are involved in stimulation and excitement of the other. For example, infant repeatedly caresses intimate parts of parent's body without age appropriate inhibition. Infant appears to be overstimulated or overexcited. OR infant relates in a seductive way with adults, e.g. touching, kissing, overly close physical contact. There is overt sexual presentation by infant. |

Parent-Infant

| p-i 8 | Quality of contact: Sexualized |
|--------------|--|
| 0 | Parent shows pleasure in bodily interaction with infant and there is no indication of sexualized behaviour or sexualized overstimulation. |
| 1 | Parent tickles, cuddles or kisses infant in a light-hearted, appreciative manner. |
| 2 | Body boundaries between parent and infant in terms of soothing and stimulation appear constantly confused. For example, parent offers older baby the breast in an unboundaried fashion, leaving her breasts constantly available to be touched and fondled. |
| 3 | Parent behaves towards infant in a manner more appropriate to a partner, requesting physical attention from infant or caressing or frolicking with infant in a clearly sexualized overstimulating manner. OR there is an inappropriate attribution of sexual intentions to infant. |
| 4 | Parent's and/or infant's body is/are involved in stimulation and excitement of the other. Parent touches infant's body parts inappropriately. Parent encourages sexualized behaviour in the infant towards him/herself. |

Infant-Parent

| i-p 11 | Quality of contact: Dissociative |
|---------------|---|
| 0 | There is no indication of dissociative behaviour. |
| 1 | In a potentially traumatic situation infant either turns to parent or finds another strategy for soothing. |
| 2 | Infant shows moments of disconnecting and withdrawal from parent but then turns to parent or finds another strategy for soothing. |
| 3 | Infant shows fleeting moments of self-stilling in the presence of the parent and does not turn to parent for soothing. |
| 4 | Infant shows pervasive pattern of disconnecting from parent. Infant displays extreme physical/emotional withdrawal from parent into states of self-stilling. Infant may become excessively still, stares into space with a dazed expression, cut off from self, parent and environment. |

Parent-Infant

| p-i 9 | Quality of contact: Dissociative |
|--------------|---|
| 0 | There is no evidence of dissociative behaviour. In a highly stressful situation, parent maintains awareness of others and the environment. |
| 1 | Parent is abstracted at moments but retains awareness of infant and others. |
| 2 | Parent fleetingly enters a state of being cut-off from infant and others but quickly recovers awareness of infant and others. |
| 3 | Parent exhibits moments of stilling, flattened affect, inexpressive face and seems to have difficulties to retain awareness of infant and others. |
| 4 | Parent enters a state in which he/she is cut off from infant and from all others. Parent enters trance-like state, freezes, motionless, eyes unfocused, unresponsive to external world. |

For more details see Appendix 5.

2. The Addendum also includes a new Coding Sheet which was amended in order to stimulate a final reflection on the overall assessment of the parent-infant relational quality and an opportunity to identify mismatches in cases where one specific coding does not seem to match the other codings of infant-parent and/or parent-infant subscales OR cases where the infant-parent codings do not match the parent-infant codings in general. For example, infant-parent 'Sexualized' 0 (i-p: 10) does not match parent-infant 'Sexualized' 3 (p-i: 8), or more generally, infant-parent 0/1 over all i-p subscales does not match with parent-infant 3 over all p-i subscales. Examples of mismatches in infant-parent and parent-infant codings are part of the PIRAT Global Scales training and will be highlighted and explained during training.

Therefore, a Coding Profile of the infant-parent and parent-infant subscales was developed to give a visual overview of the notes on coding included in the PIRAT Global Scales Coding Sheet. For example, the Coding Profile for the infant-parent interaction:

| | no concern | | concern | | |
|--|------------|---|---------|---|---|
| | 0 | 1 | 2 | 3 | 4 |
| i-p: Infant-parent interaction | | | | | |
| i-p:1 Infant's seeking of contact | | | | | |
| i-p:2 Responsiveness to contact with parent | | | | | |
| i-p:3 Responsiveness to stranger | | | | | |
| i-p:4 Ability to communicate needs | | | | | |
| i-p:5 Ability to be comforted | | | | | |
| i-p:6 Quality of contact: Aggressive/Attacking | | | | | |
| i-p:7 Quality of contact: Clinging | | | | | |
| i-p:8 Quality of contact: Frightened/Wary | | | | | |
| i-p:9 Quality of contact: Lack of pleasure | | | | | |
| i-p:10 Quality of contact: Sexualized | | | | | |
| i-p:11 Quality of contact: Dissociative | | | | | |
| i-p:12 Quality of contact: Avoidant | | | | | |

For more details of the new Coding Sheet, see Appendix 5.

Infant-parent and parent-infant relational abilities and qualities described in the PIRAT Global Scales Manual create an overall 'picture' of the dyadic dynamics of parent-infant interactions. Reliable codings of the quality of the infant-parent and parent-infant relationship are generally consistent with each other, and reflect the dyadic turn-taking and attunement of parent and infant. Reliable codings 'make sense' of infant's and parent's behaviours, mutual actions and reactions, and the Infant-Parent and Parent-Infant Global Scales' level of concern. Therefore, the coding profile stimulates a final reflection on the overall assessment of the parent-infant relational quality.

The following instruction to fill in the Coding Profile was included:

'In cases where you are coding infant-parent and parent-infant subscales and one specific coding does not seem to match the other codings, have a look at the coding profile across infant-parent and parent-infant subscale ratings. Looking at the profile you might see mismatches and be able to reflect and maybe change particular codings'. And:

'Please note on the note-sheets all the behaviours and qualities (i-p: 1-12 and p-i: 1-11) that you have chosen in order to code the level of concern and tick the boxes on the coding profile'.

3. A Confidence Rating Scale was developed to indicate the level of confidence a rater has in his/her Infant-Parent and Parent-Infant PIRAT Global Scales Ratings. The Confidence Rating Scale was included to be part of the reflection about the Global Rating, and for research purposes to be able to evaluate correlations of confidence in Infant-Parent and Parent-Infant PIRAT Global Scale Ratings and the level of inter-rater reliability. It asks the rater to tick the box for 'I am confident of my coding' ranging from 'fully' (5) to 'mostly' (4) to 'fairly' (3) to 'somewhat' (2) to 'slightly' (1) to 'not at all' (0). The Confidence Rating Scale was included in the Coding Sheet, see Appendix 5.

And an instruction was included in the manual:

'When you have finished coding the infant-parent and parent-infant scale make sure that you tick a box on the confidence rating scale according to the level of confidence you have in your coding of the infant-parent and the parent-infant scale.'

4. In addition, a mean score to indicate a mean level of concern of the Infant-Parent and Parent-Infant PIRAT Global Scales Ratings was included. The mean score was added to the coding sheet for research purposes to evaluate correlations of mean score and a future PIRAT Global Scales clinical cut-off score. See Appendix 5.

Instruction:

'The mean score indicates a mean level of concern of the Infant-Parent and Parent-Infant PIRAT Global Scales Ratings. Add up the codings for each scale (infant-parent and parent-infant) to create a total raw score for PIRAT Global Scales, and divide it by 2 to create the mean score indicating a global level of concern.'

Changes to the Training

The reliability training was changed according to the feedback of participants from previous trainings. Changes included mainly:

1. An extended introduction on the theoretical background regarding interactional capacities of very young babies from 0 – 3 months of age and specific indicators of risk, as described in Chapter 1.

Furthermore, more training clips displaying various relational qualities of small babies interacting with their mothers, in particular those indicating relational risk were included in the training process in order to provide participants with more experience in observing mothers and very young babies.

2. An extended introduction on the theoretical background regarding intercultural differences in maternal behaviours, in particular 'intrusive/controlling', 'frightening/frightened', 'hostility' and 'avoidant'.

Furthermore, training clips displaying intercultural differences in maternal behaviours, in particular 'intrusive/controlling', 'frightening/frightened', 'hostility' and 'avoidant' were included in the training process in order to provide participants with more experience in observing mothers from various cultural backgrounds and their ways of playing with their babies.

3. The risk of bias in identifying with either mother or baby was addressed in the introduction to the training. Moreover, discussion of codings during training focused on reasons why participants might identify with infant or mother and how this was related to either the quality of the observed relationship, the professional background of the rater, e.g. a child psychotherapist being mainly identified with the infant, or personal reasons impacting on the individual observation.

4. The problem of adapting to the coding system and sticking to the descriptors in the manual was repeatedly addressed during training. In particular, professionals with a psychoanalytic training welcomed discussion of the importance of using transference and countertransference as well as interpretations as important information in order to understand what was going on in an observed relationship and ways in which such understanding could facilitate coding using the manual descriptors.

5.5. A pilot study of Inter-Rater Reliability of the PIRAT Global Scales - Version 2.0

5.5.1. Method

This pilot study aimed to evaluate the inter-rater reliability of professionals using PIRAT Global Scales – Version 2.0.

1. Inter-rater reliability of PIRAT trainers CB and SH
2. Inter-rater reliability of health professionals working with parents and infants, based on a 3.5 day PIRAT reliability training course

5.5.1.1. Procedure

The procedure was the same as for the pilot study into the IRR of PIRAT Global Scales – Version 1.0., apart from there being a new group of professionals with the same overall professional training background as for the previous study: two child and adolescent psychotherapists/analysts, two adult psychotherapists (analyst/group analyst), a psychiatrist, and two social workers, some of them trained as parent-infant psychotherapists and all of them experienced in working with parents and infants and observing parent- infant interactions. The group was trained to use PIRAT Global Scales in an amended 3.5 day reliability training, using PIRAT Global Scales Manual – Version 2.0 (Broughton et al., 2016).

5.5.1.2. Sample

This study used the same sample of clips as for the pilot study into the IRR of PIRAT Global Scales – Version 1.0.

5.5.1.3. Statistics

This study used the same statistics as for the pilot study into the IRR of PIRAT Global Scales – Version 1.0.

5.5.2. Results

Inter-rater-reliability IRR (level of absolute agreement) between CB and SH was calculated again in order to agree on the ‘gold standard’ for PIRAT Global Scales – Version 2.0. Expectedly, the IRR is ‘excellent’ and even higher than for PIRAT Global Scales 1.0 given the fact that the same clips were coded (infant-parent ICC = .96, $p \leq .001$, parent-infant ICC = .95, $p \leq .001$; ICC, two-way mixed, absolute agreement, calculated using SPSS, version 22).

Inter-rater reliability IRR of health professionals working with parents and infants, based on a 2.5 day PIRAT Global Scales course, plus 1 day of feedback and discussion of codings on set 1, was ‘good’ to ‘excellent’, as shown in Table 5.5.

IRR for Infant-Parent Global Rating ranged from ICC = .71 to .87 ($p \leq .001$). IRR for Parent-Infant Global Rating ranged from ICC = .65 ($p \leq .010$) to .86 ($p \leq .001$; ICC, two-way mixed, absolute agreement, calculated using SPSS, version 22).

All raters 1-7 differentiated reliably between clinical and normative clips. And this new group of raters achieved higher levels of inter-rater reliability on PIRAT Global Scales – Version 2.0 compared to raters on Version 1.0 and PIRAT Manual – Version 3.0, coding the same set of video clips.

Table 5.4. Inter-rater reliability of rater 1 – 7 compared to the ‘gold standard’ for PIRAT Global Scales (N = 30)

| | R1 | R2 | R3 | R4 | R5 | R6 | R7 |
|---------------|------------|------------|------------|------------|------------|------------|------------|
| Infant-Parent | .79 (.000) | .71 (.000) | .73 (.000) | .82 (.000) | .79 (.000) | .79 (.000) | .87 (.000) |
| Parent-Infant | .80 (.000) | .72 (.000) | .72 (.001) | .65 (.003) | .81 (.000) | .78 (.000) | .86 (.000) |

R1 - R7: raters 1-7 (Infant Mental Health or Parent-Infant specialists, either trained psychiatrists, social workers, health visitors or psychotherapists). ICC, two-way mixed, absolute agreement, calculated by using SPSS, version 22. * $p \leq .050$. ** $p \leq .010$. *** $p \leq .001$.

5.5.3. Discussion

As expected, the level of IRR for PIRAT Global Scales – Version 2.0 between CB and SH analysed for Infant-Parent and Parent-Infant Global Ratings showed excellent levels of IRR.

All participants reached ‘good’ to ‘excellent’ levels of IRR, all of them reliable for Infant-Parent and Parent-Infant Global Rating (ICC $\geq .60$). Interestingly, all raters achieved higher levels of inter-rater reliability compared to raters of PIRAT Global Scales – Version 1.0 coding the same set of video clips. Although, this cannot necessarily be

interpreted as indicative of higher psychometric properties of PIRAT Global Scales – Version 2.0, as there are several confounding factors involved.

Raters feedback focused on the adaptation of the 2-step coding process from specific relational qualities to the rating of the global relational quality. Raters felt their use of their observations and ratings on subscale level were helpful to make a decision whenever they experienced problems in assessing the global relational quality. Furthermore, they confirmed PIRAT Global Scales offered a shared language and understanding to assess the overall quality of parent-infant relationship, risk and resilience, as well as the need for intervention

Looking into the coding notes of raters 1 – 7, disagreement over the quality of the interactional behaviour of very young infants (< 3 months), or by intercultural differences in maternal behaviours, in particular ‘intrusive/controlling’, ‘frightening/frightened’, ‘hostility’ and ‘avoidant’ and the resulting level of concern was rare. Disagreement caused by problems relating infant-parent relational quality to the parent-infant relational quality was rare. For example, we addressed the problem of coding young infants’ behaviours reliably within the training and we used more clips with infants from 0 – 3 in training. The changes included in the Addendum for Coding and the changes included in the training seemed significant for PIRAT Global Scales’ reliability.

PIRAT Global Scales – Version 2.0 (Broughton et al., 2016) can be used time-efficiently and reliably as an observational measure and a risk assessment tool to differentiate between normative and concerning relationship qualities on the basis of professional experience after the 3.5 day reliability training. PIRAT Global Scales provide a reliable framework for assessing a range of specific infant-parent and parent-infant relational qualities, as well as the global quality of the infant-parent and parent-infant relationship. Moreover, they offer a shared language and understanding among health professionals of what constitutes risk and resilience.

However, further research is needed to evaluate PIRAT Global Scales’ reliability and validity on a large sample and in various populations.

Although PIRAT is essentially a clinical assessment tool that can be rated from ‘live’ observations or videotaped interactions, it holds the potential to be used as a risk assessment and outcome measure. Next steps in research will determine PIRAT Global Scales’ reliability and validity on a larger sample.

5.6. Next steps

5.6.1. Reliability

Future research will explore PIRAT Global Scales 2.0 (2016) reliability on a larger sample. This research aims at establishing IRR for representative health professionals working with parents and infants, based on the standardised 3.5 day PIRAT Global Scales reliability training. Research questions are:

1. How reliable is the average single rater compared to the 'gold standard'?
2. What is the average inter-rater reliability of PIRAT Global Scales?

This will be reported in the following chapter.

5.6.2. Internal Consistency

This study aims to determine the internal consistency of PIRAT Global Scales 2.0 (2016) on a larger sample. Research question is:

How consistent are PIRAT Global Scales infant-parent 1-12 'gold standard' subscale ratings, and parent-infant 1-11 'gold standard' subscale ratings?

This will be reported in Chapter 7.

5.6.3. Validity

Future research will establish the construct validity of PIRAT Global Scales 2.0, evaluating the convergent and divergent validity compared to other measures. Research questions are:

1. How valid are PIRAT Global Scales 'gold standard' Infant-Parent and Parent-Infant Global Ratings compared to other measures of the quality of the parent-infant relationship?
2. How valid are PIRAT Global Scales Infant-Parent, Parent-Infant and Total Sum Scores compared to other measures of the quality of the parent-infant relationship?

This will be reported in Chapter 8.

6. Inter-rater Reliability of PIRAT Global Scales

6.1. Introduction

Following the preliminary research results and the aforementioned limitations of the PIRAT and PIRAT Global Scales' validity and reliability (as outlined in Chapters 3, 4 and 5), the validation and reliability study of PIRAT Global Scales Manual Version 2.0 (Broughton et al., 2016) was developed.

This chapter seeks to evaluate PIRAT Global Scales' inter-rater reliability (IRR) on the basis of a 3.5 day short-course PIRAT Global Scales reliability training, with a larger sample of clinical clips coded by raters from different professional backgrounds who were blind to the group and to the details of the sample, and who had participated in the previous training and reliability assessment described in Chapter 5.

The PIRAT Global Scales reliability and validation study uses video data of mothers and infants at free play from the Anna Freud Centre's 'Parent-Infant Project Randomized Controlled Trial (PIP RCT)' (Fonagy et al., 2016). Given the importance of an early intervention whenever the parent-infant relationship is at risk, this study uses the video clips of the parent-infant interaction at baseline (instead of the clips at the 12-months follow-up). The age range of the children at baseline is 0 – 12 months, therefore the reliability and validity of PIRAT Global Scales is limited to this age range. The IRR analysis focuses on the level of agreement between the supervisor, the present author (CB and SH) and the group of eight reliable raters, representative of professionals for whom the PIRAT Global Scales were developed. The group of raters consisted of eight professionals, some of whom were trained as parent-infant psychotherapists, and all of them experienced in working with parents and infants and observing parent-infant interactions.

This chapter gives an overview of the Global Scales inter-rater reliability of single raters and the group of raters, in particular inter-rater reliability (IRR) on global scales level (Infant-Parent and Parent-Infant Global Rating) and on item or subscale level (infant-parent 1-12 and parent-infant 1-11). IRR can be calculated focusing on different aspects, such as the quality of a specific rater compared to the 'gold standard' (1. single rater/specific rater) or the quality of the measure (2. group of raters/average rater) (Shrout & Fleiss, 1979; Wirtz & Caspar, 2002).

6.2. Method

6.2.1. Hypotheses

The research questions are:

1. How reliable is the average single rater compared to the 'gold standard'?
2. What is the average inter-rater reliability of PIRAT Global Scales?

Hypotheses:

1. PIRAT Global Scales show good ($\geq .60$) to excellent ($\geq .75$) levels of IRR used by infant mental healthcare professionals calculated for single raters.
2. PIRAT Global Scales show good ($\geq .60$) to excellent ($\geq .75$) levels of IRR used by infant mental healthcare professionals calculated for the average rater.

6.2.2. Procedure

Firstly, CB and SH coded the sample of clips on the Infant-Parent and Parent-Infant Global Scales rating and subscale ratings (i-p 1-12 and p-i 1-11). Where there were codings in which either of them did not feel entirely confident, these were double-coded by the other coder and discussed in order to establish a 'gold standard' coding of infant-parent and parent-infant global ratings.

To achieve the maximum information on possible rater effects, all clips were coded by the same group of raters ('Fully-crossed design', Hallgren, 2012). The group of raters comprised of eight professionals, representative of potential users of PIRAT Global Scales. Raters 1-8 were trained using PIRAT Global Scales Manual - Version 2.0 in a 3.5 day short-course PIRAT Global Scales reliability training, as outlined in the previous chapter. Their reliability was tested on a sample of 30 normative and clinical clips. All raters were reliable, showing good levels of IRR (ICC $\geq .60$, ranging from ICC = .65 – .87), for details see 5.5.

Following this, raters 1-8 individually coded Infant-Parent and Parent-Infant Global Rating and subscale ratings (infant-parent 1-12 and parent-infant 1-11) on a new sample of 40 clips, submitting their codings electronically using a PIRAT Global Scales 2.0 coding sheet (interactive pdf file including PIRAT Global Scales coding sheet and coding notes for each item/subscale).

For research question 1, the IRR for each single rater (R1-8) was calculated on Global

Scales level as well as on subscale level (i-p 1-12 and p-i 1-11) compared to the 'gold standard'.

For research question 2, the IRR for the group of raters (R1-8) was calculated on Global Scales level as well as on item level (i-p 1-12 and p-i 1-11).

'Poor' levels of IRR (Cicchetti, 1994), i.e. low levels of raters' agreement compared to the 'gold standard', can be based on the quality of the clip, the quality of the observed interaction or on the item in itself. Post-hoc analyses were calculated for unexpectedly low ICC values.

6.2.3. Sample

A group of eight reliable raters described in Chapter 5, representative for the professionals for whom the PIRAT Global Scales were developed, were chosen to establish inter-rater reliability of this newly developed observational assessment tool. The group of eight raters consisted of child and adolescent psychotherapists/analysts, adult psychotherapists/analysts, an adult psychiatrist, a group analyst and two social workers, some of whom specialised in parent-infant psychotherapy.

The sample consisted of 40 cases at baseline of the 76 cases included in the Parent-Infant Project Randomized Controlled Trial (PIP RCT) at the Anna Freud Centre (Fonagy et al., 2016), described in Chapter 4 (4.1.). The age range of the children at baseline is 0 – 12 months.

A sample size of 18 was considered necessary to approve at least 'good' levels of IRR (ICC = .60; Cicchetti, 1994) on $p \leq .050$, power = .80 with 2 raters (Zou, 2012). In order to potentially verify lower levels of IRR, 40 cases were randomly selected from the sample of viable 70 PIP RCT cases used for the validation study. In order to demonstrate a good range of differing qualities of parent-infant relationship throughout these cases, a normal distribution on the Emotional Availability Scales codings was secured. For sample characteristics see Tables 6.1. and 6.2.

Table 6.1. illustrates the inclusion criteria of the PIP RCT Study. Children's mean age at baseline is four months (SD = 3.09), mother's mean age is 31 years (SD = 5.89). The maternal General Health Questionnaire (Goldberg & Williams, 1988) conducted during the intake interview at baseline shows a mean score of 13, indicating a high

level of psychiatric caseness in mothers.

Table 6.1. Age of child and mother and maternal mental health (N = 40)

| | <i>M</i> | <i>SD</i> | Range |
|---------------|----------|-----------|---------------|
| Child | | | |
| Age (months) | 4.20 | 3.09 | 0.50 – 11.40 |
| Mother | | | |
| Age (years) | 31.84 | 5.89 | 21.10 – 41.40 |
| GHQ | 13.25 | 5.99 | 4.00 – 27.00 |

GHQ: General Health Questionnaire

Table 6.2. shows the characteristics of a fairly middle-class, married or partnered sample of mothers. 95% of mothers were referred to the PIP RCT study due to ‘maternal mental health issues’ (related to bereavement, trauma, childhood trauma) and only a few due to ‘relationship and social difficulties’ (such as domestic abuse, not bonding with baby, social isolation). Almost half of these mothers felt socially isolated. The sample included more boys than girls and most of them were the first child.

Table 6.2. Child and maternal characteristics (N = 40) – Part 1

| | n | % |
|----------------------------------|----|----|
| Child | | |
| Gender | | |
| Male | 24 | 60 |
| Female | 16 | 40 |
| Ethnicity | | |
| White | 20 | 50 |
| Other | 20 | 50 |
| First child | 29 | 73 |
| Mother | | |
| Ethnicity | | |
| White | 24 | 60 |
| Other | 16 | 40 |
| Higher Education | 20 | 50 |
| Reason for Referral | | |
| Maternal mental health | 38 | 95 |
| Relationship/Social difficulties | 2 | 5 |

GHQ: General Health Questionnaire; IQ: Intelligence quotient

Table 6.2. Child and maternal characteristics (N = 40) – Part 2

| | n | % |
|---|----------|-----------|
| Mother | | |
| Social Exclusion Criteria | | |
| Low-Income Household | 18 | 45 |
| Long-Term Unemployed | 12 | 30 |
| Temporary/Crowded Accommodation | 13 | 33 |
| Single-Parent Household | 12 | 30 |
| Chronic Illness or Physical Disability | 8 | 20 |
| Childhood Foster/Institutional Care | 3 | 8 |
| Social Isolation (Recent Relocation) | 19 | 48 |
| <20 Years of Age | 0 | 0 |
| Previous Diagnosis of Psychiatric Illness | 30 | 75 |
| | <i>M</i> | <i>SD</i> |
| Social Exclusion Criteria Met | 2.9 | 1.8 |
| | <i>M</i> | <i>SD</i> |
| Maternal Nonverbal IQ | 105.0 | 11.9 |
| Maternal GHQ Score | 13.3 | 6.0 |

GHQ: General Health Questionnaire; IQ: Intelligence quotient

6.2.4 Statistics

IRR can be distinguished between two different types of inter-rater reliability, absolute and relative agreement, also known as consistency. Absolute agreement takes differences in means between raters into account, whereas relative agreement controls for differences in means. This analysis focuses on the absolute agreement because differences in means between raters should be considered (Bartko & Carpenter, 1976). Another important differentiation in research on the psychometric properties of an observational measure is the degree of agreement between a single rater and the ‘gold standard’, and amongst a group of raters. For this analysis, IRR was calculated for single raters, as well as amongst a group of raters.

The degree of absolute agreement between single raters and the group of raters was calculated using a two way-mixed model (IBM SPSS Statistics 22) in order to compare eight specific single raters to the ‘gold standard’ or calculate the IRR for an average rater (Hallgren, 2012; Wirtz & Caspar, 2002).

The focus on absolute agreement on the 5-point rating scale of PIRAT Global Scales ratings suggests calculating Intraclass Correlation Coefficients (ICC), which offer more information and allow for more calculations when compared to Kappa Weighted (for single raters) or Kappa Fleiss (for a group of raters) (Shrout & Fleiss, 1979; Wirtz & Caspar, 2002). Intraclass Correlation Coefficients (ICC) were presented as a measure of IRR, with an estimate of 0 indicating 'no agreement' and 1 indicating 'perfect agreement'. A limitation of ICC calculations is their dependency on the variance of ratings, as a low variance diminishes the level of ICCs.

Values of absolute agreement (absolute level of agreement, unadjusted) of raters R 1-8 were calculated focusing on the 'average value' of absolute agreement between rater and 'gold standard' since measure development requires information about the IRR of an average single rater, not a specific rater's 'single value' as for the preliminary reliability testing described in Chapter 5 (Field, 2013; Hallgren, 2012). Average absolute values give the 'mean inter-rater reliability' representative for the professionals PIRAT Global Scales were developed for.

In order to calculate the IRR of an average rater, the group of raters' ICC was calculated using the same statistics and, again, focusing on the average value of the group of raters over all 40 clips.

PIRAT Global Scales IRR was interpreted using Cicchetti's (1994) commonly cited cut-offs with IRR being 'poor' for ICC values less than .40, 'fair' for values between .40 and .59, 'good' for values between .60 and .74, and 'excellent' for values between .75 and 1.0. Statistical significance was defined at $p \leq .050$, two-tailed per test.

Given the fact that all raters were reliable with the PIRAT Global Scales trainers on their initial reliability testing, it would be of value to ascertain the variance of item ratings with ICC values $\leq .40$ in post-hoc analyses.

6.3. Results

6.3.1. Single Raters Compared to the 'Gold Standard'

6.3.1.1. Global Scale Rating

Results in Table 6.3. show the level of inter-rater reliability (IRR) of single raters (R 1-8) when compared to the 'gold standard' of Infant-Parent and Parent-Infant Global Scales ratings. The IRR of all single raters on global scales' level is good to excellent.

IRR on the Infant-Parent Global Scale ranged from ICC = .70 (good) to ICC = .88 (excellent), all significant at $p \leq .001$. IRR on the Parent-Infant Global Scale ranges from ICC = .71 (good) to ICC = .90 (excellent), all of them significant at $p \leq .001$.

Table 6.3. Inter-rater reliability of raters 1-8 compared to the 'gold standard' global rating (N = 40)

| | R1 | R2 | R3 | R4 | R5 | R6 | R7 | R8 |
|-----------------------------|--------|--------|--------|--------|--------|--------|--------|--------|
| Infant-Parent Global Rating | .77*** | .83*** | .79*** | .75*** | .75*** | .77*** | .70*** | .88*** |
| Parent-Infant Global Rating | .74*** | .86*** | .76*** | .80*** | .75*** | .71*** | .72*** | .90*** |

R1-8: raters 1 – 8. *** $p \leq .001$.

6.3.1.2. Subscale Rating

Table 6.4. illustrates the IRR of single raters compared to the 'gold standard' for infant-parent 1-12 on subscale level. The table gives the level of IRR of single raters 1-8 (R 1-8) for each infant-parent subscale compared to the 'gold standard'.

The IRR of all single raters on the subscale level of the Infant-Parent Scale is mostly 'fair' to 'excellent' (Cicchetti, 1994), as the IRR mostly ranges from ICC = .41 (good) to ICC = .94 (excellent), all of them significant at $p \leq .050$.

17 out of 96 coefficients show low ICC values $< .40$ ranging from .00 to .32. 'Poor' levels of agreement are limited to the following subscales:

- infant-parent 3 'Responsiveness to stranger'
- infant-parent 7 'Quality of contact: Clinging'

- infant-parent 10 'Quality of contact: Sexualized'

The mean ICC for each single rater ranges from .50 to .88 with a Median of .77.

Table 6.4. Inter-rater reliability of raters 1-8 compared to the 'gold standard' for infant-parent 1-12 subscales (N = 40)

| | R1 | R2 | R3 | R4 | R5 | R6 | R7 | R8 |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|
| i-p1 | .66*** | .61** | .64*** | .74*** | .64*** | .73*** | .70*** | .66*** |
| i-p2 | .59*** | .68*** | .73*** | .66*** | .69*** | .66*** | .75*** | .82*** |
| i-p3 | .32 | .41* | .19 | .22 | .00 | .71*** | .26* | .75*** |
| i-p4 | .59** | .65** | .45* | .60*** | .58** | .81*** | .48* | .89*** |
| i-p5 | .65** | .69*** | .67*** | .65*** | .82*** | .79*** | .64*** | .87*** |
| i-p6 | .52* | .62** | .50* | .55** | .80*** | .82*** | .59*** | .90*** |
| i-p7 | .00 | .51* | .00 | .72*** | .41* | .94*** | .11 | .58** |
| i-p8 | .68*** | .70*** | .61** | .77*** | .84*** | .87*** | .66*** | .94*** |
| i-p9 | .68*** | .65*** | .49* | .46** | .83*** | .82*** | .67*** | .91*** |
| i-p10 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| i-p11 | .65** | .44* | .48* | .70*** | .85*** | .79*** | .63*** | .93*** |
| i-p12 | .72*** | .61** | .62** | .53** | .79*** | .82*** | .77*** | .90*** |

R1-8: raters 1 – 8. *p ≤ .050. **p ≤ .010. ***p ≤ .001.

Table 6.5. shows the IRR of single raters compared to the 'gold standard' for parent-infant 1-11 on the subscale level. The table gives the level of IRR of single rater 1-8 (R 1-8) for each parent-infant subscale compared to the 'gold standard' ratings. The IRR of all single raters on the subscale level of the Parent-Infant Scale is mostly 'fair' to 'excellent' (Cicchetti, 1994), as the inter-rater reliability mostly ranges from ICC = .40 (fair) to ICC = .97 (excellent), all of them significant (p ≤ .050).

3 out of 96 coefficients show low ICC values < .40 ranging from .00 to .39. Poor levels of agreement are limited to the following subscales:

- parent-infant 6 'Quality of contact: Intrusive'
- parent-infant 8 'Quality of contact: Sexualized'

The mean ICC for each single rater ranges from .58 to .91 with a median of .76.

Table 6.5. Inter-rater reliability of raters 1-8 compared to the 'gold standard' for parent-infant 1-11 subscales (N = 40)

| | R1 | R2 | R3 | R4 | R5 | R6 | R7 | R8 |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|
| p-i1 | .61** | .66** | .57** | .67*** | .74*** | .80*** | .64*** | .93*** |
| p-i2 | .59** | .66** | .65** | .61*** | .68*** | .74*** | .64** | .89*** |
| p-i3 | .58** | .70*** | .55** | .71*** | .82*** | .75*** | .64*** | .94*** |
| p-i4 | .70*** | .49* | .74*** | .65*** | .78*** | .81*** | .63*** | .90*** |
| p-i5 | .58** | .73*** | .41* | .68*** | .72*** | .69*** | .59** | .91*** |
| p-i6 | .39 | .60** | .68*** | .66*** | .88*** | .74*** | .70*** | .88*** |
| p-i7 | .55*** | .70*** | .68*** | .74*** | .85*** | .91*** | .71*** | .94*** |
| p-i8 | .30 | .46* | .40 | .00 | .00 | .71*** | .44* | .67*** |
| p-i9 | .66** | .79*** | .91*** | .67*** | .96*** | .89*** | .71*** | .97*** |
| p-i10 | .53* | .67*** | .54** | .64*** | .85*** | .91*** | .71*** | .91*** |
| p-i11 | .67*** | .63** | .70*** | .74*** | .88*** | .87*** | .71*** | .89*** |

R1-8: raters 1 – 8. *p ≤ .050. **p ≤ .010. ***p ≤ .001.

6.3.1.3. Post-hoc Analysis

As already discussed in 6.1.1. (Procedure), the variance of subscales with ICC values < .40 needs to be examined in post-hoc analyses. Therefore, frequencies of 'gold standard' ratings on the 0 - 4 rating scale were calculated.

'Poor' ICC values (< .40) were obtained on the following subscales:

- infant-parent 3 'Responsiveness to Stranger'
- infant-parent 7 'Quality of contact: Clinging'
- infant-parent 10 'Quality of contact: Sexualized'

and

- parent-infant 6 'Quality of contact: Intrusive/Controlling'
- parent-infant 8 'Quality of contact: Sexualized'

The frequencies of these 'gold standard' subscale ratings were calculated. Table 6.6. shows the frequencies of these subscale ratings (infant-parent: i-p 3, 7 and 10 and parent-infant: p-i 6, 8). Subscales i-p 3, 7 and 10 and p-i 8 show a low variance as 2 – 3 rating categories were not used. These subscales were mostly rated '0' 'no concern/not seen' and therefore cannot become reliable statistically. Parent-infant 6

'Intrusive/Controlling' distributes a good variance, still not becoming reliable.

Table 6.6. Frequencies of infant-parent and parent-infant subscales 'gold standard' ratings with IRR < .40 in % (N = 40)

| Subscales rating | i-p 3 | i-p 7 | i-p10 | p-i 6 | p-i 8 |
|------------------|-------|-------|-------|-------|-------|
| 0 | 77% | 97% | 97% | 14% | 84% |
| 1 | 13% | 1.5% | 3% | 37% | 16% |
| 2 | 7% | 0% | 0% | 36% | 0% |
| 3 | 3% | 0% | 0% | 10% | 0% |
| 4 | 0% | 1.5% | 0% | 3% | 0% |

6.3.2. Group of Raters

6.3.2.1. Global Scale Rating

The IRR of an average rater for PIRAT Global Scales infant-parent and parent-infant level is excellent (ICC = .88 and ICC = .90, $p \leq .001$).

6.3.2.2. Subscale Rating

Results in table 6.7. show the level of IRR of an average rater on infant-parent subscale level. The IRR of an average rater on subscale level is mostly 'good' to 'excellent' (Cicchetti, 1994) ranging from ICC = .70 to .84, significant on $p \leq .001$, apart from the subscale infant-parent 10 'Quality of contact: Sexualized' with 'poor' IRR (ICC = .32, $p \leq .050$).

Table 6.7. Inter-rater reliability of an average rater (R 1-8) for infant-parent 1-12 subscales (N = 40)

| | R 1-8 |
|-------|--------|
| i-p1 | .81*** |
| i-p2 | .83*** |
| i-p3 | .70*** |
| i-p4 | .77*** |
| i-p5 | .82*** |
| i-p6 | .74*** |
| i-p7 | .52* |
| i-p8 | .87*** |
| i-p9 | .81*** |
| i-p10 | .32* |
| i-p11 | .81** |
| i-p12 | .84*** |

R 1-8: rater 1 – rater 8.

* $p \leq .050$. ** $p \leq .010$. *** $p \leq .001$.

Results in Table 6.8. show the level of IRR of an average rater on parent-infant subscale level.

The IRR of an average rater on subscale level is mostly 'good' to 'excellent' ranging from ICC = .64 to .89, significant at $p \leq .001$.

Table 6.8. Inter-rater reliability of an average rater for parent-infant 1-11 subscales (N = 40)

| | R 1 - 8 |
|-------|---------|
| p-i1 | .82*** |
| p-i2 | .80*** |
| p-i3 | .83*** |
| p-i4 | .88*** |
| p-i5 | .83*** |
| p-i6 | .81*** |
| p-i7 | .86*** |
| p-i8 | .64*** |
| p-i9 | .89*** |
| p-i10 | .86*** |
| p-i11 | .88*** |

R 1-8: rater 1 – rater 8. *** $p \leq .001$.

6.3.2.3. *Post-hoc Analysis*

Given the fact that low ICC values $< .40$ for an average rater were limited to the subscale i-p 10 'Quality of contact: Sexualized', a post-hoc analysis was carried out in order to calculate the frequencies of the 'gold standard' ratings. Table 6.9. shows the frequencies. Subscale p-i 10 shows a low variance as 3 rating categories were not used. The subscale was mostly rated '0' 'no concern/not seen' and therefore cannot become reliable statistically.

Table 6.9. Frequencies of parent-infant subscale 10 with IRR $< .40$ in % (N = 40)

| Subscales rating | i-p10 |
|---------------------|-------|
| 0 | 97% |
| 1 | 3% |
| 2 | 0% |
| 3 | 0% |
| 4 | 0% |

6.4. Discussion

Single Raters

In line with the hypothesis, Infant-Parent and Parent-Infant Global Scales show good to excellent levels of IRR used by infant mental healthcare professionals calculated for single raters. Most correlations for single raters are higher than defined by the hypothesis for the Global Ratings, with slightly higher values for the Parent-Infant Global Rating and almost identical ranges of ICC values for the Infant-Parent and Parent-Infant Global Rating.

The IRR of single raters on subscale level of the Infant-Parent Scale is mostly fair to excellent, including some poor ICC values. The IRR of Infant-Parent and Parent-Infant Global Ratings is higher than on subscale level.

Poor levels of agreement are limited to the subscales Infant-parent 3 'Responsiveness to Stranger', Infant-parent 7 'Quality of contact: Clinging' and Infant-parent 10 'Quality of contact: Sexualized'. Poor values of IRR, i.e. bad levels of raters' agreement compared to the 'gold standard', may be based on either the rater, the quality of the clip, the quality of the observed interaction or the subscale itself (such as a poor operationalisation of the underlying theoretical construct to be observed, unclear wording etc.), training effects or the variance of the subscale regarding its values. As such, the variance of subscales with poor ICC values was examined in post-hoc analyses. The frequencies of 'gold standard' ratings on the 0 - 4 rating scale for the subscales Infant-Parent 3 'Responsiveness to Stranger', Infant-Parent 7 'Quality of contact: Clinging', Infant-Parent 10 'Quality of contact: Sexualized' and Parent-Infant 6 'Quality of contact: Intrusive' and Parent-infant 8 'Quality of contact: Sexualized' were calculated. Most subscales show a low variance as they were mostly rated '0' 'no concern/not seen' and therefore cannot become statistically reliable.

The findings of PIRAT Global Scales' IRR are similar to the IRR of widely used measures assessing the quality of the parent-infant relationship. The following studies of other measures assessing the parent-infant relationship usually distributed the IRR (absolute agreement) between two raters over the sample of clips. The IRR of the Emotional Availability Scales (EAS, Biringen, 2000, 2008) at free play were in the range of ICC = .76–.96 (Bornstein, Gini, Putnick et al., 2006a) and for a similar sample of mothers and their five-month-old infants, ICCs yielded reliabilities that ranged between .79 for non-hostility and .92 for sensitivity (Bornstein, Gini, Suwalsky, Putnick, & Haynes, 2006b).

For the Coding Interactive Behavior Scale (CIB; Feldman, 1998) a median ICC of .88. (Viaux-Savelon et al., 2014), an average ICC = .92 (range .85–.97) for a normative sample of two-year-old toddlers (Feldmann & Klein 2003) and ICC = .92 (range = .87–.98) for a sample of healthy premature born babies at 3, 6 and 12 months (Feldman, 2015) were reported, as well as an average ICC of .92 (range .85–.97) for infants referred to a mental health clinic (Feldmann et al., 2004).

A study of middle class sample mothers and their babies at a Finnish Well Baby Clinic using the CARE-Index at baseline found IRR between raters of ICC = .83 for maternal sensitivity, and .90 for child cooperation (Kemppinen et al., 2006), whereas a high-risk study of mothers who lost custody which used the CARE-Index for their parenting assessment found an IRR between the two raters on the maternal sensitivity scale of ICC = .73 (Mullick, Miller, & Jacobsen, 2001).

Average Rater

PIRAT Infant-Parent and Parent-Infant Global Scales show excellent levels of IRR for the average rater. The IRR of an average rater on infant-parent and parent-infant subscale level is mostly good to excellent, apart from the subscales infant-parent 10 'Sexualized' which showed a poor IRR. In contrast to the findings for single raters, only i-p 10 'Sexualized' shows the same low variance as the IRR of single raters. Therefore, a post-hoc analysis was carried out for infant-parent 10 'Sexualized', and similarly to single raters, the frequency calculation shows a low variance as it was mostly rated '0', 'no concern/not seen'.

To the best knowledge of the present author, no similar results on the IRR of an average rater were found in other studies on IRR of observational measures.

Consistent with the findings for the single raters, the inter-rater reliability of Infant-Parent and Parent-Infant Global Ratings is higher than on subscale level. Levels of IRR on Global Scales Ratings are higher than expected, both for single raters and the average rater. On subscale level the IRR of the average rater is higher compared to single raters.

The subscales infant-parent 'Responsiveness to Stranger', 'Clinging' and 'Sexualized' and parent-infant 'Intrusive' and 'Sexualized' can be understood as indicators of risk, as they in themselves are indicative of a severely disturbed relationship and are predictors of a disorganized attachment pattern (see Chapter 1). Methodological and clinical implications of these findings will be discussed further in the final discussion in Chapter 9.

Limitations

The sample is a referred, clinical sample although it encompasses a broad range of interactional qualities assessed by the Emotional Availability Scales. Almost half the mothers felt socially isolated even when living in a committed relationship, which might refer to the age of the baby and a baby's daily rhythm as they only allow for limited flexibility in pursuing a social life. Furthermore, the sample is characterised by a high percentage of first time mothers, and the limited age range of the children from 0 – 12 months.

Even when raters were selected as being representative of professional groups working with parents and babies, this group of raters clearly does not represent all professionals in charge of the assessment of resilience and risk in early parent-infant relationships. Moreover, they do not represent the variety of cultural backgrounds of mothers and babies who participated in this study.

The cultural background of participants and raters was not taken into account since it would have required a larger and culturally more diverse sample. This is clearly a limitation of the study, as the cultural background of raters might not only differ from the participants, but also impact on their observation and rating of several specific behaviours, most certainly parental 'Intrusiveness'.

Limitations of the manual include

Furthermore, an extended version of PIRAT Global Scales should include age specific descriptors for most infant-parent and some parent-infant subscales, in particular those indicative of relational risk. Coding criteria for these subscales, such as infant-parent 'sexualized' behaviour, need to be anchored within developmental phases within 0 - 36 months in a way that different behaviours would count at different ages as lack of anchoring could lead to poor reliability/validity.

Implications for future research will be discussed in Chapter 9.

7. Reliability and Internal Validity of Sum Scores

7.1. Introduction

Following the evaluation and establishment of validity and reliability of PIRAT Global Scales as outlined in Chapter 5, this chapter gives an overview of the evaluation of the internal consistency of PIRAT Global Scales (Manual - Version 2.0; Broughton et al., 2016).

Research on the psychometric properties of an observational measure should not only quantify the degree of agreement between raters, but also the reliability of the degree of agreement between subscales and scales within the observational measure (DeVellis, 2012; Nunnally, 1978).

PIRAT Global Scales could be seen as a Likert-Scale, a summarized scale with specific statistical meaning, resulting from the combination of 12 infant-parent and 11 parent-infant subscales. Given the much higher differentiation of sum scores ranging from 0 – 92, when compared to the 5-point rating scale of PIRAT Global Scales ranging from 0 – 4, it seems appropriate to develop sum scores that provide more information and allow for further calculations when evaluating PIRAT Global Scales' validity. Should the internal consistency be sufficient, sum scores of Infant-Parent and Parent-Infant Global Scales ratings and all 23 subscales will be developed. Sum scores will be used for additional statistical calculations. Given the much higher differentiation of sum scores, they will allow for an additional way of evaluating internal consistency, and internal validity of PIRAT Global Scales.

This study into the internal consistency of the Infant-Parent Scale and the Parent-Infant Scale uses a sample of 70 video clips from the PIP RCT Study coded by CB and SH in order to establish a 'gold standard'.

Furthermore, this chapter gives an overview of the development of PIRAT Global Scales' sum scores, in particular Infant-Parent and Parent-Infant Sum Scores as well as a Total Sum Score and their psychometric properties.

7.2. Method

7.2.1. Hypotheses

Research Questions:

How consistent are PIRAT Global Scales' infant-parent 1-12 'gold standard' subscale ratings, and parent-infant 1-11 'gold standard' subscale ratings?

Hypothesis: PIRAT Global Scales show good levels of internal consistency (Cronbach's α : $0.9 > \alpha \geq 0.8$) for the Infant-Parent as well the Parent-Infant Scale.

7.2.2. Procedure

The sample of 70 clips (including the sample of 40 clips coded for IRR in Chapter 6) from the PIP RCT Study was coded using PIRAT Global Scales -Version 2.0 by CB and SH on the Infant-Parent and Parent-Infant Global Rating and the 23 subscale ratings (i-p 1-12 and p-i 1-11). Establishing a 'gold standard' coding for each clip followed the process already described in Chapter 6.

Firstly, the inter-correlations between the 12 infant-parent subscales (i-p: 1-12) and 11 parent-infant subscales (p-i: 1-11) were calculated. Secondly, the internal consistency of Infant-Parent and Parent-Infant Global Scales over infant-parent subscales 1-12 and parent-infant subscales 1-11, and all 23 subscales was calculated.

Should the internal consistency be excellent, Infant-Parent and Parent-Infant Sum Scores, and a Total Sum Score out of all 23 subscales will be developed.

7.2.3. Sample

The sample consisted of 70 viable cases from 76 clinical cases through the 'Parent-Infant Psychotherapy RCT study at the Anna Freud Centre' at baseline (Fonagy et al., 2016). These 70 viable cases provided complete data sets on the parent-infant relationship measures against which the PIRAT Global Scales would be validated in the following Chapter 8, such as Emotional Availability Scales, Coding Interactive Behavior and the Strange Situation Procedure, and were therefore included in the validation sample. In order to secure an adequately normal distribution of qualities of

the parent-infant relationship throughout these cases, the normal distribution of Emotional Availability Scales ratings was secured. For details regarding the PIP RCT Study, see Chapter 6. For sample characteristics of the sample used for the PIRAT Global Scales validation see Tables 7.1. and 7.2.

Children’s mean age at baseline is again four months, and mother’s mean age is 31 years. The maternal General Health Questionnaire (Goldberg & Williams, 1988) conducted during the intake interview at baseline shows a mean score of 13, indicative of a high level of psychiatric symptoms in mothers.

Table 7.1. Age of child and mother and maternal mental health (N = 70)

| | <i>M</i> | <i>SD</i> | Range |
|---------------|----------|-----------|---------------|
| Child | | | |
| Age (months) | 4.05 | 3.04 | 0.50 – 11.40 |
| Mother | | | |
| Age (years) | 31.81 | 5.55 | 21.10 – 41.75 |
| GHQ | 13.20 | 6.42 | 1.00 – 28.00 |

GHQ: General Health Questionnaire.

Table 7.2. shows the characteristics of a middle-class, married or partnered sample of mothers. 97% of mothers were referred to the PIP RCT study due to ‘maternal mental health issues’ (corresponding to bereavement, trauma, childhood trauma) and only a few due to ‘relationship and social difficulties’ (such as domestic abuse, not bonding with baby, social isolation). Almost half the mothers felt socially isolated.

The sample included more boys than girls and most of them were the first child in the family.

Table 7.2. Child and maternal characteristics (N=70)

| | n | % |
|---|----------|-----------|
| Child | | |
| Gender | | |
| Male | 40 | 57 |
| Female | 30 | 43 |
| Ethnicity | | |
| White | 39 | 56 |
| Other | 31 | 44 |
| First child | 52 | 74 |
| Mother | | |
| Ethnicity | | |
| White | 47 | 67 |
| Other | 23 | 33 |
| Higher Education | 35 | 50 |
| Reason for Referral | | |
| Maternal mental health | 68 | 97 |
| Relationship/Social difficulties | 2 | 3 |
| Social Exclusion Criteria | | |
| Low-Income Household | 33 | 47 |
| Long-Term Unemployed | 18 | 25 |
| Temporary/Crowded Accommodation | 21 | 30 |
| Single-Parent Household | 24 | 34 |
| Chronic Illness or Physical Disability | 14 | 20 |
| Childhood Foster/Institutional Care | 3 | 4 |
| Social Isolation (Recent Relocation) | 31 | 44 |
| <20 Years of Age | 0 | 0 |
| Previous Diagnosis of Psychiatric Illness | 45 | 64 |
| | <i>M</i> | <i>SD</i> |
| Social Exclusion Criteria Met | 2.7 | 1.6 |
| | <i>M</i> | <i>SD</i> |
| Maternal Nonverbal IQ | 104.9 | 12.1 |
| Maternal GHQ Score | 13.2 | 6.4 |

GHQ: General Health Questionnaire; IQ: Intelligence quotient.

7.2.4. Statistics

7.2.4.1. Inter-correlations of Infant-Parent and Parent-Infant Subscales

The inter-correlations between the 12 infant-parent subscales (i-p 1-12) and 11 parent-infant subscales (p-i 1-11) were evaluated through Pearson's product-moment correlation coefficient r , calculated using SPSS 22. Cohen (1988; 1992) gives the following guidelines for an interpretation of the effect size of Pearson's r in social sciences: Small $r \geq 0.10$, Medium $r \geq 0.30$, Large $r \geq 0.50$. Significance was defined at $p \leq .050$ (2-tailed).

7.2.4.2. Internal Consistency

The internal consistency for Infant-Parent and Parent-Infant Global Scales over infant-parent subscales 1-12 and parent-infant subscales 1-11, and all 23 subscales was calculated using Cronbach's alpha (Cronbach, 1951, 1970) as an indicator of the reliability of PIRAT Global Scales subscales. Cronbach's alpha, α , can be interpreted as being the mean out of all inter-correlations between subscales calculated in 7.2.4.1. Because inter-correlations among test subscales are maximised when all subscales measure the same construct, Cronbach's alpha is widely believed to indirectly indicate the degree to which a set of subscales measures a single uni-dimensional latent construct. For details see DeVellis (2012), Kline (2000), Nunnally (1978) and Ritter (2010).

Cronbach (1951; 1970) suggests the following interpretation of internal consistency:

| Cronbach's alpha | Internal consistency |
|-------------------------|----------------------|
| $\alpha \geq 0.9$ | Excellent |
| $0.9 > \alpha \geq 0.8$ | Good |
| $0.8 > \alpha \geq 0.7$ | Acceptable |
| $0.7 > \alpha \geq 0.6$ | Questionable |
| $0.6 > \alpha \geq 0.5$ | Poor |
| $0.5 > \alpha$ | Unacceptable |

The scale-subscale correlations between the 'gold standard' Global Ratings and subscale ratings were evaluated by Pearson's r . Significance was defined at $p \leq .050$ (2-tailed).

7.2.4.3. Infant-Parent, Parent-Infant and Total Sum Scores

If the internal consistency of Infant-Parent, Parent-Infant Global ratings and the total of all 23 subscales is excellent ($\alpha \geq 0.90$), Sum Scores of infant-parent and parent-infant subscales and all 23 subscales over the sample of 70 clips will be developed. The statistical properties of the Likert-scaled Sum Scores offer much more differentiation ranging from 0 – 92, compared to the 5-point rating scale of PIRAT Global Scales ranging from 0 – 4. Therefore, the development of sum scores will allow for further calculations when evaluating PIRAT Global Scales' validity. Given their much higher differentiation, they will offer an additional way of evaluating internal consistency, and internal validity of PIRAT Global Scales.

The Sum Scores for infant-parent subscales coded on PIRAT Global Scales' rating scale (values range from 0 – 4) would range from 0 – 48, from 0 – 44 for parent-infant subscales and from 0 – 92 over all 23 subscales. Significance was defined at $p \leq .050$ (2-tailed).

7.3. Results

7.3.1. Inter-correlations of Infant-Parent and Parent-Infant Subscales

The correlations between the 12 PIRAT Global Scales infant-parent subscales are shown in Table 7.3.

Correlations range from $r = .01$ to $.87$ and show quite a variety from no correlation at all to very high correlations. Most inter-correlations of infant-parent subscales show high effect sizes ($r > .50$). Consistently small correlations ($r < .30$) are found in subscales such as i-p 7 'Clinging' and i-p 10 'Sexualized', and some of the inter-correlations of subscale i-p 3 'Interest in Stranger'.

Table 7.3. Pearson's correlations between 'gold standard' ratings of PIRAT Global Scales infant-parent subscales (N = 70)

| | i-p 1 | i-p 2 | i-p 3 | i-p 4 | i-p 5 | i-p 6 | i-p 7 | i-p 8 | i-p 9 | i-p 10 | i-p 11 | i-p 12 |
|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|
| i-p 1 | | .94** | .29* | .84** | .81** | .69** | .26* | .73** | .79** | -.03 | .70** | .87** |
| i-p 2 | | | .28* | .81** | .79** | .70** | .26* | .72** | .81** | -.05 | .66** | .86** |
| i-p 3 | | | | .13 | .03 | .31* | .29* | .11 | .16 | -.08 | .47** | .30* |
| i-p 4 | | | | | .76** | .67** | .22* | .70** | .77** | -.01 | .58** | .78** |
| i-p 5 | | | | | | .69** | .21 | .72** | .71** | -.05 | .53** | .73** |
| i-p 6 | | | | | | | .20 | .72** | .68** | -.15 | .58** | .72** |
| i-p 7 | | | | | | | | .17 | .15 | -.03 | .24* | .23 |
| i-p 8 | | | | | | | | | .74** | -.16 | .58** | .72** |
| i-p 9 | | | | | | | | | | -.18 | .56** | .82** |
| i-p 10 | | | | | | | | | | | -.04 | -.10 |
| i-p 11 | | | | | | | | | | | | .63** |
| i-p 12 | | | | | | | | | | | | |

* $p \leq .050$ (2-tailed). ** $p \leq .010$ (2-tailed).

The correlations between the 11 PIRAT Global Scales parent-infant subscales are shown in Table 7.4.

Correlations range from $r = .06$ to $.87$ and again show quite a variety from no correlation at all to very high correlations. Most inter-correlations of parent-infant subscales show high effect sizes ($r > .50$). Consistently small correlations ($r < .30$) are found for subscale p-i 8 'Sexualized' and mostly medium effect sizes are found for subscale p-i 9 'Dissociation'. Overall inter-correlations of parent-infant subscales are higher than the inter-correlations for infant-parent subscales (see Table 7.3).

Table 7.4. Pearson's correlations between 'gold standard' ratings of PIRAT Global Scales parent-infant subscales (N = 70)

| | p-i 1 | p-i 2 | p-i 3 | p-i 4 | p-i 5 | p-i 6 | p-i 7 | p-i 8 | p-i 9 | p-i 10 | p-i 11 |
|--------|-------|-------|-------|-------|-------|-------|-------|--------|-------|--------|--------|
| p-i 1 | | .87** | .84** | .77** | .69** | .78** | .72** | -.17** | .42** | .80** | .77** |
| p-i 2 | | | .87** | .80** | .71** | .83** | .71** | -.18 | .44** | .83** | .77** |
| p-i 3 | | | | .80** | .76** | .81** | .78** | -.15 | .46** | .79** | .77** |
| p-i 4 | | | | | .76** | .78** | .62** | -.33** | .55** | .73** | .71** |
| p-i 5 | | | | | | .70** | .71** | -.19 | .46** | .73** | .64** |
| p-i 6 | | | | | | | .67** | -.14 | .45** | .77** | .72** |
| p-i 7 | | | | | | | | .06 | .58** | .67** | .79* |
| p-i 8 | | | | | | | | | -.16 | -.25* | -.14 |
| p-i 9 | | | | | | | | | | .42** | .49** |
| p-i 10 | | | | | | | | | | | .71 |
| p-i 11 | | | | | | | | | | | |

* p ≤ .050 (2-tailed). ** p ≤ .010 (2-tailed).

The correlations between the 12 PIRAT Global Scales infant-parent and 11 parent-infant subscales are shown in Table 7.5. Correlations range from $r = .01$ to $.80$ and show quite a variety from no correlation at all to very high correlations. Most inter-correlations of infant-parent and parent-infant subscales show high effect sizes ($r > .50$). Consistently small correlations ($r < .30$) are found for subscales such as i-p 3 'Interest in stranger', i-p 7 'Clinging' and i-p 10 'Sexualized' and subscale p-i 8 'Sexualized', and mostly medium effect sizes are found for subscale p-i 9 'Dissociation'. Overall inter-correlations of parent-infant subscales are smaller than those for infant-parent subscales (see Tables 7.3. and 7.4).

Table 7.5. Pearson's correlations between 'gold standard' ratings of PIRAT Global Scales infant-parent and parent-infant subscales (N = 70)

| | i-p 1 | i-p 2 | i-p 3 | i-p 4 | i-p 5 | i-p 6 | i-p 7 | i-p 8 | i-p 9 | i-p 10 | i-p 11 | i-p 12 |
|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|
| p-i 1 | .78** | .77** | .25* | .74** | .70** | .65** | .08 | .61** | .69** | -.07 | .66** | .69** |
| p-i 2 | .80** | .79** | .13 | .78** | .73** | .68** | .05 | .70** | .75** | -.10 | .59** | .80** |
| p-i 3 | .80** | .80** | .18 | .73** | .72** | .67** | .05 | .72** | .77** | -.09 | .62** | .76** |
| p-i 4 | .80** | .80** | .15 | .70** | .68** | .54** | .20 | .61** | .71** | -.06 | .60** | .75** |
| p-i 5 | .69** | .72** | .22 | .61** | .57** | .58** | .06 | .65** | .74** | -.20 | .54** | .70** |
| p-i 6 | .74** | .76** | .15 | .74** | .66** | .62** | .08 | .68** | .76** | -.09 | .64** | .73** |
| p-i 7 | .69** | .68** | .30* | .63** | .58** | .65** | .15 | .80** | .66** | -.16 | .63** | .67** |
| p-i 8 | -.31* | -.26* | -.05 | -.22 | -.23 | -.11 | -.06 | -.03 | -.29* | -.07 | -.11 | -.28* |
| p-i 9 | .48** | .46** | .02 | .48** | .42** | .30* | .09 | .46** | .49** | .03 | .36** | .46** |
| p-i 10 | .79** | .75** | .17 | .70** | .67** | .63** | -.01 | .67** | .75** | -.11 | .62** | .76** |
| p-i 11 | .70** | .67** | .13 | .65** | .59** | .63** | -.06 | .70** | .66** | -.04 | .59** | .65** |

* p ≤ .050 (2-tailed). ** p ≤ .010 (2-tailed).

The evaluation of inter-correlations was a first step on the way to the calculation of internal consistency. The internal consistency of the Infant-Parent Scale is $\alpha = .93$ (12 subscales), of the Parent-Infant Scale is $\alpha = .95$ (11 subscales), and for all 23 infant-parent and parent-infant subscales altogether $\alpha = .97$, calculated for the 'gold standard' rating (N = 70). In order to compare the internal consistency based on the 'gold standard' with those for each single rater, table 7.6. gives an overview of the internal consistency for Infant-Parent Scale (12 subscales), Parent-Infant Scale (11 subscales), and for all 23 infant-parent and parent-infant subscales altogether based on the ratings shown in Chapter 6 (N = 40).

Table 7.6. Internal consistency of Raters 1-8 Infant-Parent, Parent-Infant Global Rating, and infant-parent and parent-infant subscales altogether (N = 40)

| | R1 | R2 | R3 | R4 | R5 | R6 | R7 | R8 |
|-------------|-----|-----|-----|-----|-----|-----|-----|-----|
| i-p | .94 | .94 | .94 | .91 | .95 | .93 | .95 | .89 |
| p-i | .95 | .95 | .91 | .93 | .96 | .94 | .95 | .92 |
| i-p and p-i | .97 | .97 | .96 | .95 | .97 | .96 | .98 | .95 |

G: 'gold standard' rating, R1-8: raters 1 – 8.

Table 7.7. shows the subscale-scale correlation for the Infant-Parent Scale 'gold standard' rating. Most correlations are high, ranging between $r = .71$ and $.92$, excepting infant-parent subscales i-p 3 'Responsiveness to Stranger', i-p 7 'Clinging' and i-p 10 'Sexualized', which shows a low negative correlation.

Table 7.7. Pearson's correlations between 'gold standard' Infant-Parent Global Rating and infant-parent subscales (N = 70)

| Infant-Parent | Subscale-scale correlation |
|---------------|----------------------------|
| i-p 1 | .92** |
| i-p 2 | .91** |
| i-p 3 | .28 |
| i-p 4 | .83** |
| i-p 5 | .79** |
| i-p 6 | .78** |
| i-p 7 | .27 |
| i-p 8 | .78** |
| i-p 9 | .82** |
| i-p 10 | -.10 |
| i-p 11 | .71** |
| i-p 12 | .89** |

** $p \leq .010$ (2-tailed).

Table 7.8. shows the subscale-scale correlation for the Parent-Infant Scale ‘gold standard’ rating. Most correlations are high, ranging between $r = .53$ and $.91$, excepting Parent-Infant subscale p-i 8 ‘Sexualized’, which is negative.

Table 7.8. Pearson’s correlations between ‘gold standard’ Parent-Infant Global Rating and parent-infant subscales (N = 70)

| Parent-Infant | Subscale-scale correlation |
|---------------|----------------------------|
| p-i 1 | .89** |
| p-i 2 | .90** |
| p-i 3 | .91** |
| p-i 4 | .84** |
| p-i 5 | .79** |
| p-i 6 | .85** |
| p-i 7 | .82** |
| p-i 8 | -.19 |
| p-i 9 | .53* |
| p-i 10 | .84** |
| p-i 11 | .83** |

* $p \leq .050$ (2-tailed). ** $p \leq .010$ (2-tailed).

7.3.2. Distribution of Sum Scores

Table 7.9. shows the psychometric properties of the Sum Scores for Infant-Parent, Parent-Infant and the Total Sum Score over all 23 subscales, each rated on a 5-point rating scale ranging from 0 – 4. Mean and standard deviation (SD) for Infant-Parent Sum Score, Parent-Infant Sum Score are similar. Infant-Parent, Parent-Infant Sum Score and Total Sum Score show roughly normal distributions, slightly right skewed and platykurtic. Figure 7.1. shows the distribution of Infant-Parent, Parent-Infant Sum Score and Total Sum Score in histograms.

Table 7.9. Psychometric properties of the Infant-Parent, Parent-Infant and the Total Sum Scores (N = 70)

| | Mean | SD | Min | Max | Skewness | Kurtosis |
|--|------|------|-----|-----|----------|----------|
| Infant-Parent Sum Score (12 subscales) | 11.6 | 7.7 | 1 | 32 | .801 | -.13 |
| Parent-Infant Sum Score (11 subscales) | 12.9 | 9.3 | 0 | 39 | .68 | -.17 |
| Total Sum Score (23 subscales) | 24.5 | 16.5 | 1 | 67 | .71 | -.20 |

Figure 7.1. Histograms for Infant-Parent (ipsum), Parent-Infant (pisum) and the Total Sum (totsum) Scores

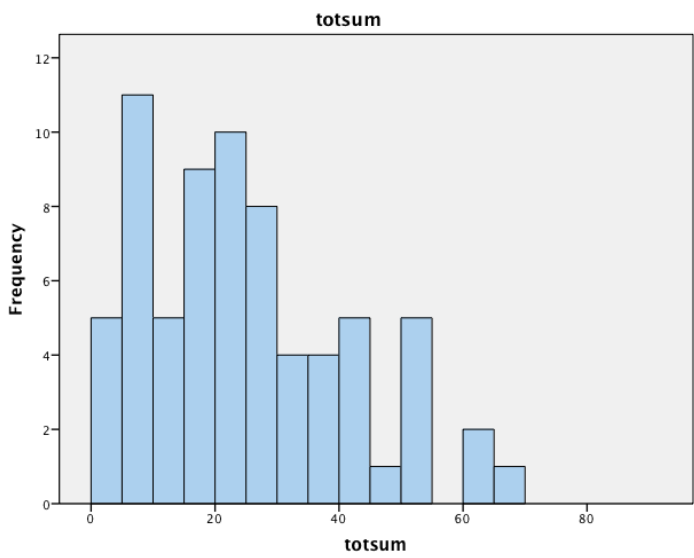
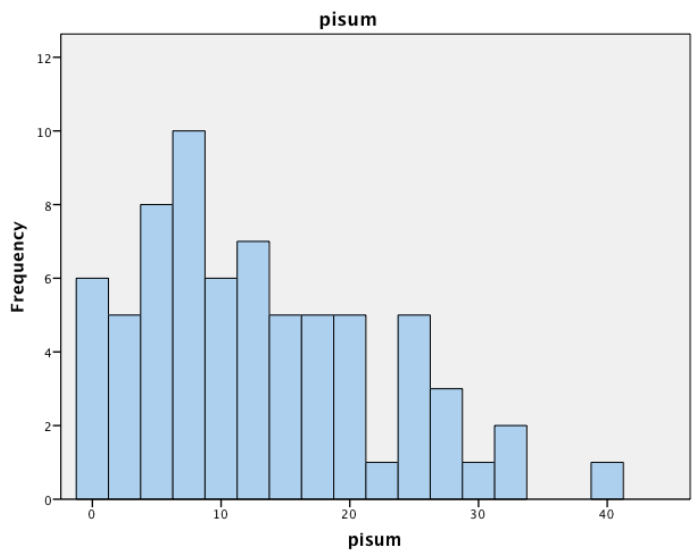
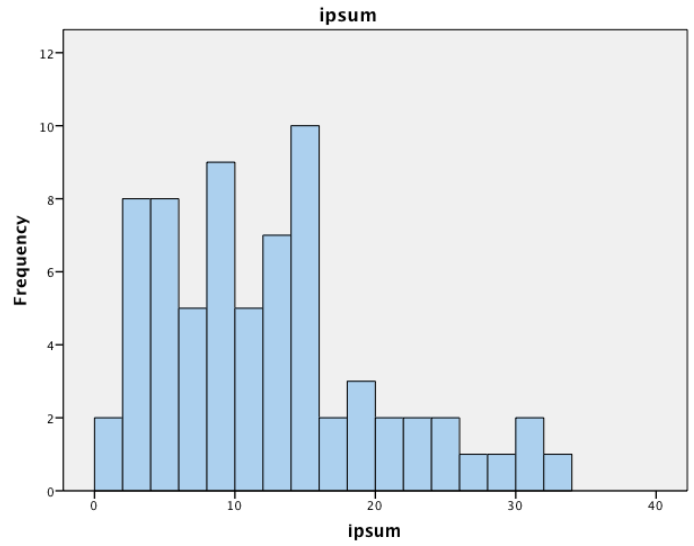


Table 7.10. shows the inter-correlations of Infant-Parent and Parent-Infant Global ‘gold standard’ ratings, Infant-Parent, Parent-Infant and Total Sum Score. Correlations of Infant-Parent, Parent-Infant and Total Sum Score are high, ranging from $r = .88$ to $.97$, indicating a high internal validity of PIRAT Global Scales.

Table 7.10. Pearson’s correlations between Infant-Parent, Parent-Infant Global ratings and Infant-Parent, Parent-Infant and the Total Sum Scores (N = 70)

| | Infant - Parent G | Parent - Infant G | Infant-Parent Sum Score | Parent-Infant Sum Score | Total Sum Score |
|-------------------------|----------------------|----------------------|----------------------------|----------------------------|--------------------|
| Infant-Parent Global | | .94** | .87** | .79** | .86** |
| Parent-Infant Global | | | .86** | .84** | .88** |
| Infant-Parent Sum Score | | | | .88** | .96** |
| Parent-Infant Sum Score | | | | | .97** |
| Total Sum Score | | | | | |

* $p \leq .050$ (2-tailed). ** $p \leq .010$ (2-tailed).

7.4. Discussion

PIRAT Global Scales show very good levels of internal consistency for the Infant-Parent as well as for the Parent-Infant Scale.

Inter-correlations of Infant-Parent and Parent-Infant Subscales

Correlations of infant-parent and parent-infant subscales show a variety from no correlation at all to very high correlations. Most inter-correlations of infant-parent subscales show high effect sizes. Mostly medium effect sizes are found for subscale p-i 9 'Dissociation', and consistently small correlations are found for the following subscales such as i-p 3 'Interest in Stranger', i-p 7 'Clinging' and i-p 10 'Sexualized', or p-i 8 'Sexualized'. Interestingly overall inter-correlations of parent-infant subscales are higher than for infant-parent subscales.

Ideally one would expect a homogeneous scale where subscales correlate positively with each other but notably i-p 10 'Sexualized' correlates negatively and at a very low level with the total scale. In order to understand why 'Sexualized' was rated high when the other subscales were rated low on concern, and vice versa, calculations were double checked for computing errors with no errors found. So, i-p 10 'Sexualized' seem to actually have no, or just a minimal and negative, correlation with other Infant-Parent subscales. Looking into the details of the calculation no effects ($r \geq .10$) are found for i-p 10 'Sexualized' and i-p 1-5 + 7 (i-p1 'Infant's seeking of contact', i-p 2 'Responsiveness to contact', i-p3 'Responsiveness to stranger', i-p 4 'Ability to communicate needs', i-p 5 'Ability to be comforted' and i-p 7 'Clinging') and low effects (from $r = .10$ to $.39$) are found for i-p 6, 8 and 9 (i-p 6 'Aggressive/Attacking', i-p 8 'Frightened/Wary' and i-p 'Lack of pleasure').

Subscales i-p 3 'Interest in stranger', i-p 7 'Clinging' and i-p 10 'Sexualized', or p-i 8 'Sexualized' rated mostly 0 'no concern/not seen'. Cross tabulation tables show that 68 out of 70 cases are rated 0 for i-p 10 'Sexualized' as well as 59 cases out of 70 for p-i 8 'Sexualized'. Therefore, these subscales are expected to show a low subscale-scale correlation which results in a lower internal consistency. These subscales seem to be rarely coded more than 'no concern' and from a methodological point of view one could discuss whether these subscales, in particular the negatively correlating i-p 10 'Sexualized', should be deleted from the PIRAT Global Scale in order to create a more homogeneous scale. Interestingly, the deletion of i-p 10 'Sexualized' only had a minimal effect on Cronbach's α as it increases α from $.92$ to $.94$.

From a clinical point of view these subscales mostly rated 0 'no concern/not seen' are rare but vital indicators of risk, and therefore needed in order to differentiate very concerning cases from the less concerning ones and represent the full range of

disturbed relational qualities.

Internal Consistency

Infant-Parent, Parent-Infant Global Scale and all 23 subscales together show excellent levels of internal consistency based on the 'gold standard'. The internal consistency for each single rater (based on their ratings on a smaller sample of $N = 40$ in Chapter 6) shows also mostly excellent levels of internal consistency, such as $\alpha = .89$ to $.95$ for Infant-Parent, $\alpha = .91$ to $.96$ for Parent-Infant Global Scale and $\alpha = .93 - .98$ for all 23 subscales together. Scales and subscales measure a homogeneous construct and therefore the development of sum scores made sense.

The subscale-scale correlations for the Infant-Parent and Parent-Infant 'gold standard' ratings are high, except for infant-parent subscales i-p 3 'Responsiveness to stranger', i-p 7 'Clinging' and i-p 10 'Sexualized' and Parent-Infant subscale p-i 8 'Sexualized'. Infant-Parent subscale-scale correlations (ranging from $.71$ to $.92$) are higher compared to Parent-Infant (ranging from $.53$ to $.91$).

Pearson's correlations were re-calculated using Kendall coefficients in order to control for computing errors when using Pearson's correlations for only a 5-point metric scale, but similar results were found.

Overall, values for subscale-scale correlations display good levels of positive correlation, apart from i-p 'Sexualized' and p-i 8 'Sexualized' correlating negatively. Again, this indicates the subscales observing sexualized behaviours in infants and parents are not homogeneous with the rest of the scale. However, a reverse scoring does not make sense as for PIRAT Global Scales in general a higher value indicates a higher level of concern.

Internal consistency of other measures assessing the quality of the parent-infant relationship show similar levels of internal consistency, such as EAS $\alpha = .67 - .98$ (Bornstein et al., 2006a) $\alpha = .71 - .84$ (Vliegen et al., 2009); for the CIB 'adequate internal consistency' was found across ages and samples from different cultures (Feldman, 2012) and moderate to poor for the PIP RCT sample (Sleed, 2013). Unfortunately, the internal consistency of the CARE-Index was not reported.

Sum Scores

Mean and standard deviation (SD) for Infant-Parent Sum Score, Parent-Infant Sum Score are almost identical. Infant-Parent, Parent-Infant Sum Score and Total Sum Score show roughly normal distributions, slightly right skewed and platykurtic.

The roughly normal distributions, slightly right skewed and platykurtic distributions of Infant-Parent Sum Score, Parent-Infant Sum score are typical distributions of clinical

data.

Inter-correlations of Infant-Parent, Parent-Infant and Total Sum Score are high (ranging from $r = .88$ to $.97$), indicating a high internal validity of PIRAT Global Scales.

Other measures assessing the quality of the parent-infant relationship show similar levels of internal validity for their sum scores, such as the CIB. The CIB's coding scales were factor-analysed and the three alternative subscales resulted in greatly improved internal consistencies of the sum scores, such as 'Dyadic Attunement' $\alpha = 0.94$, 'Parent Positive Engagement' $\alpha = 0.83$ and 'Child Involvement' $\alpha = 0.86$.

Limitations

The coding in order to achieve a 'gold standard' rating was done only by CB and SH, who are extremely familiar with the measure and each other's codings, and therefore likely to produce high reliability and high levels of internal consistency.

Future research into PIRAT Global Scales' psychometric properties should aim to further explore the coding system of the Infant-Parent and Parent-Infant Scales, as they are not yet fully homogeneous, given that i-p 10 and p-i 8 'Sexualized' are correlating negatively with the other subscales. Furthermore, future research focusing on generalisability versus replicability should therefore evaluate results for reliability and internal validity based on a variety of raters.

8. Validity of PIRAT Global Scales

8.1. Introduction

The study has demonstrated that PIRAT Global Scales can identify areas of concern in the parent-infant relationship and has also proved to be a reliable assessment tool for the quality of the relationship when used by clinicians with a parent-infant mental health background, on the basis of a 3.5 day training course. However, a measure is not necessarily valid simply because it is reliable. PIRAT Global Scales' validity, when compared to other measures assessing the quality of the early parent-infant relationship, will therefore be evaluated within the following subsection.

Validity, as well as reliability, is a relative concept and there are different forms of construct validity (Kramer, Douglas, Bernstein, & Phares, 2009). Cronbach and Meehl (1955) proposed the following three steps to evaluate it:

1. Articulating a set of theoretical concepts and their interrelations.
2. Developing ways to measure the hypothetical constructs proposed by the theory.
3. Empirically testing the hypothesised relations.

Construct validity is "the degree to which a test measures what it claims to be measuring" (Brown, 1996; Cronbach & Meehl, 1955; Polit & Beck, 2012), specifically whether a test measures the intended construct. Constructs are abstractions that are deliberately created by researchers in order to conceptualize the latent variable, which is correlated with scores on a given measure (although it is not directly observable).

In classical test theory on validity, construct validity is one of three main types of evidence, alongside content and criterion. Modern test theory defines construct validity as the overarching concept of validity research, subsuming all other types of validity (Messick, 1995; Schotte, Maes, Cluydts, De Doncker, & Cosyns, 1997). Construct validity consists of two subtypes, convergent and discriminant construct validity. Convergent validity refers to the degree to which two measures of constructs that theoretically should be related, are in fact related. In contrast, discriminant validity tests whether concepts or measurements that are supposed to be unrelated are, in fact, unrelated (Campbell & Fiske, 1959).

Research on psychometric properties of an observational measure should quantify the 'relatedness' of constructs among the new measure and other widely used and already well validated measures. Therefore, the degree of 'agreement' or 'disagreement' of theoretical constructs measured by these scales should be calculated using

correlations in order to establish the convergent and divergent validity. As construct validity is essential to the perceived overall validity of a measure, the research on PIRAT Global Scales' validity focuses on construct validity.

The preceding study into the validity of PIRAT (Broughton, 2009; Mann, 2001) focused on construct validity using the Greenspan-Lieberman Observation System for Assessment of Caregiver-Infant Interaction during Semi-Structured Play (GLOS; Greenspan & Lieberman, 1989), showing good to excellent results. For details, see Chapter 3. Following the lines of this research into the validity of PIRAT, and the shortcomings discussed, the validation study of PIRAT Global Scales (Version 2.0; Broughton et al., 2016) was designed to establish its construct validity on a large sample, compared to other well validated measures of the quality of the parent-infant relationship and to specific indicators of risk.

Therefore, the study looks into the construct validity of PIRAT Global Scales evaluating convergent validity compared to other measures.

The following clinically widely used and already well validated measures will be used for the consideration of convergent validity:

1. Emotional Availability Scales (EAS, 3rd version; Biringen, 2000).
2. Coding Interactive Behavior (CIB; Feldman, 1998).
3. CARE-Index (Crittenden, 2001).

And indicators of risk, such as:

4. Disorganized attachment (Main & Solomon, 1986, 1990) assessed by the Strange Situation Procedure (SSP, Ainsworth et al., 1978).
5. Low 'Reflective functioning on the Parent Development Interview' (PDI-R; Slade, Aber, Berger et al., 2003) using the 'Reflective Functioning' coding system (Version 2.0; Slade, Bernbach, Grienberger, Levy, & Locker, 2005).
6. High Parental Stress assessed by the Parenting Stress Index – Short Form (PSI-SF; Abidin, 1995).

The study focuses on concurrent construct validity as all measures were assessed at baseline, except the Strange Situation Procedure which was conducted at the 12 months follow-up and therefore evaluates predictive construct validity.

The sample is a clinical sample from the PIP RCT Study providing a good range of interactional qualities with an age range of children from 0 – 12 months.

8.2. Method

8.2.1. Hypotheses

The PIRAT Global Scales validation study looks into the construct validity of the measure, evaluating convergent validity compared to other measures. For ease of reading, results are depicted for each measure PIRAT Global Scales were compared to.

The research questions are as follows:

1. How valid are PIRAT Global Scales 'gold standard' of Infant-Parent and Parent-Infant Global Rating compared to other measures of the quality of the parent-infant relationship?
2. How valid are PIRAT Global Scales Infant-Parent, Parent-Infant and Total Sum Scores ('gold standard') compared to other measures of the quality of the parent-infant relationship?

Overall hypothesis:

PIRAT Global Scales show good levels of convergent construct validity compared to other measures of the quality of the parent-infant relationship. For details, see below.

Good convergent construct validity ($r \geq .40$) is to be expected for:

- A. Dyadic scales of other measures, such as 'Dyadic Attunement' (CIB)
- B. Infant-Parent Global Rating and Sum Scores with other measures' child subscales, such as 'Child Involving and 'Child Responsive' (EAS), and 'Child Involvement' (CIB), as well as 'Cooperation'.
- C. Parent-Infant Global Rating and Sum Scores with other measures' parent subscales, such as 'Sensitivity', 'Structuring' 'Non-intrusive' and 'Non-hostile' (EAS), and 'Parental Positive engagement' (CIB), as well as 'Sensitivity' (CARE-Index).

Fair convergent construct/predictive validity ($r \geq .20$) is to be expected for:

- D. Infant-Parent Global Rating and Sum Score, and Total Sum Score and the prediction of 'Disorganized Attachment' (SSP), in particular the dichotomized variable 'Disorganized Attachment: 1: yes/2: no'.
- E. Parent-Infant Global Rating and Sum Score and 'reflective functioning on the PDI'.

Low convergent construct validity ($r \geq .10$) is to be expected for:

F. Parent-Infant Global Rating and Sum Scores with 'Total Stress' within the parenting role and 'Parent-Child Dysfunctional Interaction', as assessed by the Parenting Stress Index – Short Form.

1. The Emotional Availability Scales (EAS; 3rd version; Biringen, 2000) were designed to assess the quality of dyadic interaction between a child (0–14 years) and caregiver based on Ainsworth's conceptualisation of maternal sensitivity and Emde's work on emotion as a 'sensitive barometer' of the relationship between a parent and a child (Emde & Easterbrooks, 1985). Emotional Availability (EA) is a relational construct comprised of elements such as emotional expression and responsiveness, as well as openness, warmth and emotional attunement. This is characterised by 1) the caregiver's emotional signals, 2) the child's emotional signals, and 3) the caregiver's ability to identify and accurately interpret the child's emotional experience (Biringen, 2008). The EAS consist of a sum score and six subscales, such as parental 'Sensitivity', 'Structuring' 'Non-intrusive', 'Non-hostile' and 'Child Involving and 'Child Responsive' (Biringen, 2008). The scoring structure of each subscale is as follows: maternal sensitivity ranges from 1 'highly insensitive' to 9 'highly sensitive'; structuring ranges from 1 'non-optimal' to 5 'optimal'; Non-intrusiveness ranges from 1 'intrusive' to 5 'non-intrusive'; Non-hostility ranges from 1 'markedly hostile' to 5 'non-hostile'; and 'Child Involvement of Caregiver' and 'Responsiveness' each range from 1 'non-optimal' to 7 'optimal' (Biringen, 2008). Higher scores reflect a better overall quality of the affective relationship between parent and child (Biringen, 2008). For details about the theoretical constructs see Chapter 1; for more information about the measure see Chapter 2.

Therefore, Emotional Availability seems a relevant concept against which to validate PIRAT Global Scales in order to see to what extent PIRAT Global Scales Global, and Sum Score Ratings relate to the overall, child and parental aspects of EA.

2. Coding Interactive Behavior (CIB; Feldman, 1998) is a rating system assessing various aspects of parent–child interactions. It consists of 45 items based on 22 parent, 16 child, 5 dyadic behaviours and 2 overall codes, which are rated from 1 'low intensity/frequency' to 5 'high intensity/frequency'. The PIP RCT study computed three subscales, based on a factor analysis of data from a study at the Anna Freud Centre: 'Dyadic Attunement', 'Parental Positive Engagement' and 'Child Involvement'

(Sleed, Baradon & Fonagy, 2013). For more information about the measure, see Chapter 2.

As the CIB coding system is widely used in research on the parent-infant relationship it seems a relevant measure to validate PIRAT Global Scales against.

3. The CARE-Index: Infant Coding Manual (Crittenden, 2010) comprises seven aspects of interactional behaviour, in particular three parental behaviours - 'sensitive', 'controlling' and 'unresponsive' and four infant subscales, 'cooperative', 'difficult', 'compulsive' and 'passive'. The CARE-Index: Infant Coding Manual examines 'facial expression', 'vocal expression', 'position and body contact', 'expression of affection', 'turn-taking', 'control' and 'choice of activity'. Sensitivity is rated on a 14-point 'sensitivity scale' ranging from 14-9 'sensitive' down to 4-0 'sufficient misattunement so that play is not possible at all'. For details about the theoretical constructs, see Chapter 1. For more information about the measure, see Chapter 2.

As the CARE-Index: Infant Coding Manual is widely used in infant mental health settings it seems an appropriate measure to validate PIRAT Global Scales against.

The next paragraph gives an overview of PIRAT Global Scales' construct validity compared to indicators of risk, such as:

4. The Strange Situation Procedure (SSP; Ainsworth et al., 1978) is the 'gold standard' to assess the infant's attachment pattern to the caregiver. The infant's attachment behaviour is rated and classified on four categories, secure, insecure-avoidant, insecure-resistant and disorganized. The 'Disorganization Rating Scale' (Main & Solomon, 1990) ranges from 1 'no sign of disorganization' to 9 'definite qualification for D attachment status'.

Given the association between trauma and disorganized attachments in infancy, it seems essential that a measure observing the quality of the parent-infant relationship is able to capture aspects that are characteristic of infants who are more likely to manifest a disorganized attachment pattern (Main & Solomon, 1986). The Infant-Parent Scale includes several descriptors of infants' often contradictory and inexplicable behaviours such as proximity seeking followed by avoidance or freezing, avoidance with expressions of strong distress, undirected, misdirected or interrupted movements and expressions, mistimed and slowed movements, very passive, 'compulsive-compliant' or frightened behaviours, avoidance, clinging, freezing and stilling (Crittenden, 1988; Crittenden & Di Lalla, 1988; Fraiberg, 1982; Main & Hesse, 2005; Solomon & George, 1999, 2006). Furthermore, the Parent-Infant Scale includes several atypical and frightening maternal behaviours linked with disorganized

attachment in children, such as disrupted interactions without repair, extremely insensitive and frightening/ frightened behaviours which might indicate dissociative states, intrusiveness, sexualized behaviour, hostile and helpless states, withdrawal or role-reversal (Abrams et al., 2006; Bronfman, Parsons et al., 2004; Feldman, 2007; Field, 2010; Lovejoy et al., 2000; Lyons-Ruth & Jacobovitz, 1999, 2008; Out et al., 2009; Madigan et al., 2006; Macfie et al., 2008; Main & Hesse, 2005; Murray et al., 1996a; Tronick & Reck, 2009). Therefore, PIRAT Global Scales Infant-Parent and Parent-Infant Global Ratings and Sum Scores are expected to correlate to some extent with disorganization. For details about the theoretical constructs, see Chapter 1. For more information about the measure, see Chapter 2.

5. 'Reflective functioning on the Parent Development Interview' (PDI-R; Slade, Aber, Berger et al., 2003). The PDI, a semi-structured clinical interview, is used to assess the parent's experience of motherhood, as well as her representations of her child and the relationship between them. The PDI is coded on 'Reflective Functioning (RF)' (Version 2.0; Slade, Bernbach et al., 2005) ranging from -1 'Negative RF', to 9 'Exceptional RF'. High scores indicate a higher degree of awareness as to the infant's subjective experience and the parent's own mental state.

The parental capacity to hold the child's mind 'in mind' is described as parental mentalization or reflective function (RF; Slade, 2005). This parental capacity to mentalize or reflect on their infant as an intentional being in his own right, links the parent's attachment history to parent-child interaction (Grienenberger et al., 2005; Slade, 2005; Slade et al., 2004; Slade, Grienenberger, Bernbach, Levy, & Locker, 2005). In particular, parental mentalization has been found to identify infant disorganization (Grienenberger et al., 2005; Slade, Grienenberger et al., 2005). The mother's ability to take the child's perspective was found to mediate and moderate the association between depression and sensitivity (Trapolini, Ungerer, & McMahon, 2008). For details about the theoretical constructs see Chapter 1. For more information about the measure, see Chapter 2.

Given this, RF seems another relevant concept to validate PIRAT Global Scales against in order to evaluate the expectedly low convergent correlation between Parent-Infant Scale and Sum Score correlates and parental capacity to reflect on their child.

6. High levels of 'Total Stress' in parenting and and 'Parent-Child Dysfunctional Interaction', as assessed by the Parenting Stress Index – Short Form (PSI-SF; Abidin, 1995), is related to dysfunctional parenting and predicts the potential for parental behaviour problems and child adjustment difficulties (Schechter, Wilhelm et al., 2010), as well as psychosocial risk and parental psychopathology

(Schechter, Suardi et al, 2015; Whiteside-Mansell et al., 2006). The PSI-SF questionnaire quickly screens 36 items on a 5-point scale ranging from 0–5 for stress in the parent-child relationship and can be applied to parents with children under the age of 12. It yields a Total Stress Score ‘Total Stress’ in parenting and several subscale scores, such as ‘Parent-Child Dysfunctional Interaction’. Self-reported parental stress has been shown to be predictive of low levels of parental reciprocity and warmth, unhealthy parenting style and use of harsh discipline in toddlers (e.g., Rodgers, 1993; Shiflett & Winsler, 2002; Springer & Cohen, 1998). High levels of self-reported ‘Parent-Child Dysfunctional Interaction’ in mothers of toddlers were found to be related to parent’s reports of psychological symptoms and psychosocial risk factors (Whiteside-Mansell et al., 2006), as well as maternal PTSD (Schechter, Wilhelm et al, 2010; Schechter, Suardi et al. 2015) and depressive symptoms (Schechter, Wilhelm et al., 2010). For details see Chapter 1. Therefore, the relationship between self-reported parental stress and ‘relationship dysfunction’, and their correlation with observed parent-infant interactional behaviours will be evaluated.

Given the research on maternal self-reported stress and awareness of dysfunctional interactions and the actual quality of the observed parent-infant relationship mentioned above, a low convergent correlation is to be expected.

8.2.2. Procedure

The sample of clips was coded using PIRAT Global Scales 2.0 Manual (2016). The ‘gold standard’ ratings of Infant-Parent and Parent-Infant Global rating, and Infant-Parent, Parent-Infant and Total Sum Score rating were compared to the ratings on the observational measures and assessment tools described in 8.2.1.

The Emotional Availability Scales (EAS, 3rd Version; Biringen, 2000) and the Coding Interactive Behavior (CIB; Feldman, 1998) codings were undertaken by two reliable research psychologists working on the PIP RCT Study, blind to all sample details and codings on other measures. The CARE-Index (Crittenden, 2001) was coded by a reliable CARE-Index trainer independent of the project and therefore blind to all details of the mother-infant dyads and the codings on other assessments.

The Strange Situation Procedure (SSP; Ainsworth et al., 1978) was used to assess the child’s attachment behaviour at Timepoint 3 of the PIP RCT Study, as 12 months is the lower age limit for the assessment. The procedure was videotaped and the infant’s attachment behaviour was rated and classified on the secure, insecure-avoidant, insecure-resistant and disorganized classification by two reliable research

psychologists who were independent of the project and blind to all information regarding the parent-infant dyads.

The level of the 'Reflective Functioning on the Parent Development Interview' (PDI; Slade, Aber et al., 2004) was coded using verbatim transcripts on the coding system 'Parental RF' (Slade, Bernbach et al., 2004). The interviews were rated by four blind research assistants, who had been trained to reliable standards on the measure.

The evaluation of 'Maternal Stress in Parenting' and 'Parent-Child Dysfunctional Interaction' on the Parenting Stress Index – Short Form (PSI-SF; Abidin, 1995) was administered by two trained and reliable research psychologists, working on the PIP RCT Study, again blind to all sample details.

Construct validity for each of the ratings listed above was evaluated by calculating the correlation with the PIRAT Global Scales ratings.

8.2.3. Sample

The sample consisted of 70 viable clinical cases from the PIP RCT Study at baseline, described in Chapter 7. For sample characteristics, see 7.2.2.

8.2.4. Statistics

The inter-correlations between PIRAT Global Scales' subscales and the other measures were evaluated by the Pearson product-moment correlation coefficient r . Cohen (1988; 1992) gives a general guideline for an interpretation of the effect size of Pearson's r in social sciences, such as small $\geq .10$, medium $\geq .30$ and large $\geq .50$. Since effect sizes for validity have slightly higher cut-offs, therefore for this study a good level of validity is defined by $r \geq .40$, and a fair level is defined by $r \geq .20$ (Buehner, 2010), and low level of validity is defined by $r \geq .10$. Significance was defined at $p \leq .050$ (2-tailed).

8.3. Results

8.3.1. Construct Validity compared to other Measures of the Parent-Infant Relationship

8.3.1.1. Emotional Availability Scales (EAS)

Table 8.1. shows the correlation of the PIRAT Global Scales global ratings and Sum Scores with Emotional Availability Sum Score and the subscales ‘Sensitivity’, ‘Structuring’ ‘Non-hostile’, ‘Child involving’ and ‘Child responsive’.

Infant-Parent and Parent-Infant Global rating and Sum Scores show a good ($r \geq -.40$) convergent construct validity, correlating negatively with the Emotional Availability Scales’ Sum Score. Infant-Parent Global Rating and Sum Score show a good level of convergent construct validity, correlating negatively with the Emotional Availability Scales’ child subscale scores, such as ‘Child Involving’ and ‘Child Responsive’. Parent-Infant Global Rating and Sum Score show good convergent construct validity, correlating negatively with the Emotional Availability Scales’ parental subscales, such as ‘Sensitivity’ and ‘Structuring’. Results indicate a good level of construct validity of PIRAT Global Scales and Emotional Availability.

Table 8.1. Pearson’s correlations between PIRAT Global Scales and EAS (N = 70)

| | EA Sum Score | EA Sensitivity | EA Structuring | EA Child Involving | EA Child Responsive |
|----------------------|--------------|----------------|----------------|--------------------|---------------------|
| Infant-Parent Global | -.56** | -.48** | -.47** | -.50** | -.56** |
| Parent-Infant Global | -.61** | -.53** | -.52** | -.53** | -.58** |
| Infant-Parent Sum | -.52** | -.42** | -.46** | -.44** | -.51** |
| Parent-Infant Sum | -.57** | -.53** | -.47** | -.45** | -.46** |
| Total Sum | -.56** | -.50** | -.48** | -.46** | -.50** |

* $p \leq .050$ (2-tailed). ** $p \leq .010$ (2-tailed).

8.3.1.2. Coding Interactive Behavior (CIB)

Table 8.2. shows the correlation between PIRAT Global Scales global ratings and Sum Scores with CIB 'Dyadic Attunement', CIB 'Parent Positive Engagement' and CIB 'Child Involvement'.

Infant-Parent and Parent-Infant Global Ratings and Sum Scores show a good ($r \geq -.40$) convergent construct validity, correlating negatively with the CIB's 'Dyadic Attunement'. In addition, Parent-Infant Global Rating and Sum Score show good convergent construct validity, correlating negatively with the CIB's 'Parental Positive Engagement'. Infant-Parent and Parent-Infant Global Ratings and Sum Scores show only fair convergent construct validity with the CIB's 'Child Involvement'.

Results indicate fair to good levels of construct validity of PIRAT Global Scales and the domains of the CIB system, in particular 'Dyadic Attunement'.

Table 8.2. Pearson's correlations between PIRAT Global Scales and CIB (N = 70)

| | CIB Dyadic Attunement | CIB Parent Positive Engagement | CIB Child Involvement |
|----------------------|-----------------------|--------------------------------|-----------------------|
| Infant-Parent Global | -.50** | -.45** | -.38** |
| Parent-Infant Global | -.49** | -.46** | -.37** |
| Infant-Parent Sum | -.56** | -.45** | -.30* |
| Parent-Infant Sum | -.58** | -.48** | -.22 |
| Total Sum | -.59** | -.48** | -.26* |

* $p \leq .050$ (2-tailed). ** $p \leq .010$ (2-tailed).

8.3.1.3. CARE-Index

Table 8.3. shows the correlation of the PIRAT Global Scales Global Ratings and Sum Scores with CARE-Index parental subscales 'Sensitivity', 'Controlling' and infant subscales 'Non-responsiveness', 'Cooperation', 'Compulsiveness', 'Difficulty' and 'Passiveness'. Infant-Parent Global Ratings and Sum Scores show fair ($r \geq -.20$) convergent construct validity correlating negatively with the CARE-Index's subscale infant 'Cooperation' scores, and Parent-Infant Global and Sum Score Ratings with the CARE-Index subscale parental 'Sensitivity' and infant 'Non-responsiveness', except for Parent-Infant Sum which correlates on a low level ($r \geq -.10$). There is a low level of construct validity of Global Ratings and Sum Scores and the CARE-Index's subscale

scores of infant 'Compulsiveness' and 'Difficulty', except for Parent-Infant Global, which does not correlate with 'Difficulty'. There is no construct validity of Parent-Infant Global Ratings and Sum Scores and the CARE-Index subscale parent 'Controlling' and the CARE-Index subscale infant 'Passiveness', except from a low correlation with Infant-Parent Sum and Total Sum Scores. These results indicate a fair level of construct validity of PIRAT Global Scales with specific CARE-Index subscales, such as parent 'sensitivity' and infant 'Non-responsiveness' and 'Cooperation'.

Table 8.3. Pearson's correlations between PIRAT Global Scales and CARE-Index (N = 70)

| | Care-Index Sensitivity | Care-Index Controlling | Care-Index Non-Responsiveness | Care-Index Cooperation | Care-Index Compulsiveness | Care-Index Difficulty | Care-Index Passiveness |
|----------------------|------------------------|------------------------|-------------------------------|------------------------|---------------------------|-----------------------|------------------------|
| Infant-Parent Global | -.37** | -.09 | .25* | -.35** | .11 | .10 | -.00 |
| Parent-Infant Global | -.31** | -.06 | .20 | -.30* | .10 | .04 | .02 |
| Infant-Parent Sum | -.39** | -.03 | .22 | -.38** | .16 | .20 | -.15 |
| Parent-Infant Sum | -.34** | -.03 | .19 | -.33** | .12 | .15 | -.08 |
| Total Sum | -.38** | -.03 | .21 | -.37** | .14 | .18 | -.11 |

* $p \leq .050$ (2-tailed). ** $p \leq .010$ (2-tailed).

8.3.2. Construct Validity compared to Indicators of Risk

8.3.2.1. Strange Situation Procedure – Disorganized classification

Table 8.4. shows the construct validity of PIRAT Global Scales compared to the disorganized attachment pattern assessed by the Strange Situation Procedure SSP (Ainsworth et al., 1978), such as SSP 'Secure' (1 'secure/not disorganized'), SSP 'Disorganized' (1 'yes/disorganized') and SSP 'Disorganized Scale' (scale range from 1 'no sign of disorganization' to 9 'definite qualification for D attachment status').

PIRAT Global Scales Infant-Parent and Parent-Infant Global Rating show mostly low, not significant correlations with any of the 'Disorganized' variables, whereas Infant-Parent, Parent-Infant and Total Sum Scores show a fair ($r \geq -.20$) convergent construct

validity correlating negatively with the 'Disorganized Attachment' at the Strange Situation Procedure, in particular the dichotomised variable 'Disorganized Attachment: 1: yes/2: no'. Results of PIRAT Global Scales Sum Scores show a fair level of construct validity with 'Disorganized Attachment'.

Table 8.4. Pearson's correlations between PIRAT Global Scales and SSP (N = 70)

| | SSP Secure (not Disorganized) | SSP Disorganization yes/no | SSP score on Disorganization Scale |
|----------------------|-------------------------------|----------------------------|------------------------------------|
| Infant-Parent Global | -.22 | -.18 | -.08 |
| Parent-Infant Global | -.24 | -.15 | -.12 |
| Infant-Parent Sum | -.15 | -.24* | -.18 |
| Parent-Infant Sum | -.15 | -.28* | -.19 |
| Total Sum | -.16 | -.27* | -.19 |

* $p \leq .050$ (2-tailed). SSP secure: 1: secure, 0 insecure/disorganized. SSP disorganization 0: not disorganized, 1: disorganized. Disorganization Scale: 0: No D – 9: Definite D

8.3.2.2. Reflective functioning/RF on the PDI

'Reflective functioning on the Parent Development Interview' (PDI-R; Slade et al., 2003) coding system 'Reflective Functioning' (Version 2.0; Slade, Bernbach et al., 2005).

Table 8.5. shows the construct validity of PIRAT Global Scales compared to the level of 'reflective functioning/RF on the PDI' (scale ranging from -1 'Negative RF' to 9 'Exceptional RF'). Parent-Infant Global Rating and Parent-Infant Sum Score show a fair ($r \geq -.20$) convergent construct validity correlating negatively with 'reflective functioning on the PDI'. Infant-Parent Global shows a low level of construct validity with 'reflective functioning', as well as the Total Sum score. Results are indicative of a good level of construct validity of both Parent-Infant Global and Sum Score, as well as Infant-Parent Global and Total Sum Score.

Table 8.5. Pearson's correlations between PIRAT Global Scales and RF on the PDI (N = 70)

| | Overall RF Score |
|----------------------|------------------|
| Infant-Parent Global | -.26* |
| Parent-Infant Global | -.26* |
| Infant-Parent Sum | -.19 |
| Parent-Infant Sum | -.27* |
| Total Sum | -.24* |

* $p \leq .050$ (2-tailed).

8.3.2.3. 'Parental stress' on Parenting Stress Index (PSI)

Table 8.6. shows the construct validity of PIRAT Global Scales compared to the level of 'Total Stress' in parenting and 'Parent-Child Dysfunctional Interaction' on the Parenting Stress Index PSI (Abidin, 1995). Parent-Infant Global Rating and Parent-Infant Sum Scores show no convergent construct validity with 'Total Stress' or 'Parent-Child Dysfunctional Interaction' assessed with the PSI. Results indicate no construct validity between PIRAT Global Scales and self-reported parental stress and dysfunctional interactions assessed with a self-report questionnaire in infancy.

Table 8.6. Pearson's correlations between PIRAT Global Scales and 'Total Stress' and 'Parent-Child Dysfunctional Interaction' on the PSI (N = 70)

| | PSI Total Stress | PSI Parent-Child Dysfunctional Interaction |
|----------------------|------------------|--|
| Infant-Parent Global | .23 | .23 |
| Parent-Infant Global | .16 | .18 |
| Infant-Parent Sum | .11 | .10 |
| Parent-Infant Sum | .15 | .09 |
| Total Sum | .13 | .10 |

8.4. Discussion

The results from the evaluation of PIRAT Global Scales mostly confirm the overall hypothesis for measures assessing the quality of the parent-infant relationship. PIRAT Global Scales show fair to good levels of convergent construct validity compared to other measures of the quality of the parent-infant relationship. The discussion of results follows the chronology of the hypotheses from A. – F. (for details see 8.2.1.).

As was expected, good convergent construct validity was found for:

A. Dyadic scales of the CIB 'Dyadic attunement'. Results indicate good levels of construct validity of PIRAT Global Scales and the dyadic domain of the Coding Interactive Behaviour System, 'Dyadic Attunement'.

B. Infant-Parent Global Rating and Sum Scores with other measures' child subscales, such as 'Child Involving and 'Child Responsive' (EAS), and 'Child Involvement' (CIB), as well as 'Cooperation': Infant-Parent Global Rating and Sum Score show a good level of construct validity correlating negatively with the Emotional Availability Scales' child subscale scores, such as 'Child Involving and 'Child Responsive'.

C. Parent-Infant Global Rating and Sum Scores with other measures' parent subscales, such as 'Sensitivity', 'Structuring' 'Non-intrusive' and 'Non-hostile' (EAS), and 'Parental Positive engagement' (CIB), as well as 'Sensitivity' (CARE-Index). PIRAT Global Scales Parent-Infant Global Rating and Sum Score show a good construct validity correlating negatively with the Emotional Availability Scales' parental subscales, such as 'Sensitivity' and 'Structuring'. Parent-Infant Global Rating and Sum Score also show a good convergent construct validity correlating negatively with the CIB's 'Parental Positive Engagement'.

Contrary to expectations, Infant-Parent Global Ratings and Sum Scores only show fair levels of convergent construct validity with the CIB's 'Child Involvement'. Surprisingly, Infant-Parent Global Ratings distribute just a fair level of construct validity with the CARE-Index subscale infant 'Non-responsiveness'. Parent-Infant Global Ratings and Sum Scores showed only fair levels of convergent construct validity correlating negatively with the CARE-Index' subscale parental 'Sensitivity' and infant 'Cooperation'. Theoretical and clinical implications of these findings will be discussed in Chapter 8.

Expectedly, fair convergent construct validity was found for:

D. Infant-Parent and Parent-Infant Sum Score and 'Disorganized Attachment' (SSP), in particular the dichotomized variable 'Disorganized Attachment: 1: yes/2: no'. Results of PIRAT Global Scales Sum Scores show a fair level of construct validity with 'Disorganized Attachment'. Yet, these findings are difficult to account for, as it is unclear why PIRAT Global Scales would correlate negatively with the disorganized variables, since one would expect high values on PIRAT to correlate positively with high levels of disorganization. However, given the fact that only sum scores correlate significantly with disorganization, Global Ratings might not represent disorganized behaviours well enough. This will be subject to the discussion of limitations and implications for future research in Chapter 9.

E. Parent-Infant Global Rating and Sum Score and 'reflective functioning on the PDI'. Parent-Infant Global Rating and Parent-Infant Sum Score show fair convergent construct validity, correlating negatively with 'reflective functioning on the PDI'. Unexpectedly, Infant-Parent Global Rating and Sum Score showed only a fair level of construct validity with 'reflective functioning'.

F. Results indicate no construct validity between PIRAT Global Scales and 'Total Stress' in parenting and 'Dysfunctional Interaction' on the Parenting Stress Index PSI, as none of the correlations were significant. PIRAT Global Scales are an observational measure designed to identify risk in the emerging parent-infant relationship and rate the observed dyadic qualities of parent-infant interaction rather than relying on what parents report in clinical interviews or questionnaires (Salomonsson & Sleed, 2010). Other than the findings by several studies in toddlers and pre-schoolers (e.g., Rodgers, 1993; Schechter, Wilhelm et al., 2010; Schechter, Suardi et al., 2015; Shiflett & Winsler, 2002; Springer & Cohen, 1998; Whiteside-Mansell et al., 2006) self-reported 'Total Stress' in parenting and 'Parent-Child Dysfunctional Interaction' on the Parenting Stress Index PSI (Abidin, 1995) and the observed interaction assessed with PIRAT Global Scales show no convergent construct validity. Results indicate no correlation between objective relational quality and subjective parental awareness of stress and dysfunctional interactions in infancy. To the best knowledge of the present author a possible explanation is that objectively observed relational quality may not show relevant concurrent validity with parental subjective awareness of the relational quality assessed with self-report questionnaires, such as the Parenting Stress Index, at this early stage of the emerging parent-infant relational development between 0 – 12 months compared to toddlers and pre-schoolers from 12 – 48 months.

Validity of measures used for PIRAT Global Scales Validation

PIRAT Global Scales found similar results for its construct validity compared to existing well-validated measures:

Research focused on construct validity found links between EA maternal 'Sensitivity', 'Structuring, and 'Non-Intrusiveness' as well as 'Child Responsiveness' and 'Child Involvement' with attachment security (Altenhofen et al., 2013; Biringen et al., 2014; Easterbrooks et al., 2000; Easterbrooks & Biringen, 2000; Ziv et al., 2000), in particular EA maternal 'Sensitivity' related to attachment security (Sagi et al., 2002).

The CIB has been shown to have good convergent and discriminant construct validity (Feldman & Eidelman, 2003; Feldman, Eidelman et al., 2004; Feldman et al., 2002; Ferber & Feldman, 2005; Ferber et al., 2005), as well as construct validity of 'Reciprocity' with synchrony assessed by micro-analytic coding (Moshe & Feldman, 2006; Harel, 2006), as well as between 'Child involvement' and 'Withdrawal' and withdrawal behaviour assessed with the Alarm Distress Baby Scale (Dollberg et al., 2006; Guedeney & Fermanian, 2001).

Construct validity of the CARE-Index found a relation between 'Sensitivity' and secure attachment, 'Controlling' as well as 'Non-responsive' interaction to avoidant attachment and 'Controlling & Non-responsive' interaction to avoidant/ambivalent attachment patterns (Crittenden, 2005).

Research on the validity of the PDI RF coding system demonstrated construct validity of RF in relation to maternal and infant attachment status (Slade et al., 2005), maternal behaviour (Grienenberger et al., 2005; Schechter et al., 2008), maternal psychopathology (Schechter, 2003; Schechter et al., 2005) and improvements regarding maternal attributions to their child (Schechter et al., 2006), and its predictive validity for treatment change (Suchman et al., 2010; Suchman, DeCoste, McMahon, Rounsaville, & Mayes, 2011; Suchman, DeCoste, Castiglioni, Legow, & Mayes, 2008). A study by Sleet (2013) found one can confidently use the overall RF score as a single indicator of the parent's mentalizing capacity (Slade et al., 2004). Research on maternal psychopathology also linked maternal reflective functioning with impairments in mentalizing capacities: namely depression, somatisation, phobic anxiety, paranoid ideation, and psychoticism (Brent, 2009; Bruene, 2005; Liotti & Gumley, 2009; Luyten, van Houdenhove, Lemma, Target, & Fonagy, 2012; Moriguchi et al., 2006; Uekermann et al., 2008; Wang, Wang, Chen, Zhu, & Wang, 2008).

Limitations

A limitation to this study is that it is a clinical sample, without a normative comparison, even if a good range of interactional qualities are assessed by the Emotional Availability Scales. Furthermore, it is a middle-class sample, with a limited age range of child, from 0 – 12 months, compared to the age range of 0 – 24 months PIRAT was designed for.

These findings and limitations present interesting theoretical and clinical implications for further exploration of the validity of PIRAT Global Scales, which will be subject to future research discussed in Chapter 9.

Given the comparable construct validity of PIRAT Global Scales to the well validated measures used for the validation study, PIRAT Global Scales provide a useful clinical assessment of the global quality of the parent-infant relationship, as well as of specific behavioural aspects constituting resilience and risk in the early relationship within the first year of life.

9. Discussion, Conclusions and Future Directions

9.1. Introduction

As outlined in Chapter 1, the parent-infant relationship provides the basis and the framework for the development of the infant's 'sense of self', its capacity to regulate affective states and its attachment security. Therefore, the early caregiving relationship, in particular the quality of infants' interactions with their parents is critical for biological, cognitive, emotional and social development. The research into affective regulation and co-regulation, and the minute-to-minute changes within the mutual parent-infant interaction showed dyadic matching to be associated with infants' positive affect and engagement, whereas dyadic mismatches are associated with infants' negative affect and dysregulation. It described how the parent-infant dance moves from matching (coordinated, synchronous) states of shared meanings and intentionality to mismatched (miscoordinated, dyssynchronous) states, and back to matching intentional states via active, jointly reparatory processes. This highlights how 'dyadic meaning making' and 'reparation' develop within the mutual regulation of each individual's meanings, intentions, and relational needs. Therefore, the observation of the actual parent-infant interaction is the most objective way to assess relational quality and to gain insight into the specific ways in which disruptions in the parent-infant relationship surface, how they are repaired or when maintained, lead to ongoing misattunement in the relationship with the consequences described in Chapter 1.

To date, the theoretical landscape has mostly focused on the dyadic mother-infant relationship and has therefore been primarily concerned with maternal aspects impacting the early relationship. The review of measures assessing the dyadic mother-infant relationship outlined in Chapter 2 therefore focused on measures, designed for observing the interaction between mother and infant by an external observer assessing both parent and infant behaviours and the dyadic relational quality. This overview was limited to reliable and valid measures, which can be applied from 0 – 24 months of the infant's age, prior to the formation of an attachment pattern in order to assess disturbances in the parent-infant relationship at its earliest possibility.

Given the fact that most reliable and valid measures were developed for research purposes, and most clinically used measures to assess the global quality of the parent-infant relationship either aimed to assess primarily maternal behaviours, or were limited to a particular setting and age range, this review of measures clearly stated the need

for an observational measure developed for clinical use to assess the overall quality of the dyadic parent-infant relationship from 0 – 2 years. Such a measure should systemize impressions of maternal and infant's subjectivity, in order to assess resilience and risk in the parent-infant interaction, and define the need for intervention. Furthermore, it should adopt a developmental perspective and offer a psychodynamic approach to parent-infant relationships based on assumptions about the unconscious processes underlying particular behaviours, and their subsequent impact on the infant's internal working model of the relationship. Finally, it should be applicable for use by health professionals from various training backgrounds, and offer a shared language to reflect upon the global quality of parent-infant relationships and areas of concern.

This thesis has charted the development of the Parent-Infant Relational Assessment Tool (PIRAT) Global Scales, addressing the measurement gap for a clinical parent-infant relationship assessment tool (from birth to two years) that is grounded in psychoanalytic thinking. It offers a global rating of the overall quality of the parent-infant relationship, as well as a more differentiated view on a variety of relational aspects constituting resilience and risk.

This final chapter provides an integration of the research findings. Opening with a brief recapitulation of psychoanalytic theories and measurement assessing the parent-infant relationship, theoretical and clinical implications emerging from this study will be discussed. The discussion of the studies presented in this thesis gives an overview of the refinement of PIRAT, the development of the standardised reliability training and the pilot study into PIRAT's inter-rater reliability. This is followed by a summary of the development of PIRAT Global Scales, pilot studies into its inter-rater reliability, and an overview of the main results of the PIRAT Global Scales' reliability and validity, pertaining to psychometric properties of PIRAT Global Scales, and the discussion of its limitations. Finally, the chapter concludes with directions for future research.

9.2. The Assessment of the Parent-Infant Relationship

9.2.1. The Assessment of the Parent-Infant Relationship in Clinical Work

The inclusion of relationship disorders as a stand-alone axis in a multi-axial diagnostic system (as with the widely used DC:0-3/DC:0-3R (ZERO TO THREE, 1994; 2015), and newly developed DC:0-5 (ZERO TO THREE, 2017) assumes that the relationship between the infant and primary caregiver is a key component in the development of psychiatric symptoms, as well as in the treatment of these symptoms, and that it may, in itself, constitute a specific diagnostic entity for the infant and toddler age range (Mueller et al., 2013). The interplay between individual and relationship factors in the pathogenesis of early childhood mental illness, in particular a child's difficult temperament and negativity in the mother-child interaction, is predictive of externalising disorders (Olson, Bates, Sandy, & Lanthier, 2000; Shaw, Owens, Giovannelli, & Winslow, 2001). Within one study, 53% to 73% of a clinical sample fulfilled the DC:0-3 criteria for the diagnosis of a relationship disorder (Keren et al., 2003; Minde & Tidmarsh 1997). A Danish population sample reported a rate of relationship disorders of 8.5%, and there was a significant association between having a relationship disorder and the occurrence of hyperactivity/attention deficit disorder, reactive attachment disorder, disorder of conduct and emotions, or regulatory disorders (Skovgaard et al., 2000). Another study found that relationship disorders were significantly more likely to occur in combination with disorders of affect than disorders of regulation or posttraumatic stress disorder (Thomas & Clark, 1998). In summary, disorders in the relationship between young children and their parents seem to be prevalent, especially in clinical samples (e.g., Donenberg & Baker, 1993). In addition to this, infant mental health services state that problems with the parent-infant relationship are commonplace and that the parent-infant interaction is a significant factor in infant mental health focused interventions (Fonagy & Target, 2002).

Infancy research in recent decades has evidenced the impact of early relational experiences on the development of the self, affect regulation, and sensorimotor development. There has been a growing body of research on the consequences for brain development, with the most rapid period of brain growth occurring in the first two years of life. Whilst we need to understand more in the field of neurobiology, gene modification and moderation through relational experiences, we already know a great deal about the serious, long-term consequences of trauma, neglect and abuse on early brain development and mental health in infancy, as well as subsequent physical, emotional and social development (Balbernie, 2001; Glaser, 2001). Chapter 1, the

overview of psychoanalytic thinking on the parent-infant relationship, delineated the impact of the primary relationship on the child's health and development (see WHO, 2004), emphasising the importance of assessing the parent-infant relationship and providing interventions to improve the relationship between the caregiver and child.

Further elucidated in Chapter 2, the observational assessment of the quality of early parent-infant interaction is essential for our theoretical understanding of first relational experiences, attachment and developmental psychopathology. Assessment tools can be applied in clinical and early intervention settings in various ways, e.g. preventative screening for problems which may warrant referrals to clinical interventions; to inform in-depth parenting assessments; to aid clinicians in informing their formulations and techniques in working with parents and babies; as an evaluation of treatment progress and outcomes for parent-infant interventions (Sleed, 2013). The observation of the actual parent-infant interaction is the most objective way to assess this relational quality and offers insight into the ways in which disruptions in the parent-infant relationship may develop, becoming either repaired or maintained, in turn leading to ongoing mis-attunement, with the consequences outlined in Chapter 1.

Various initiatives, such as Early Head Start (Early Head Start National Resource Center, 2013), Sure Start (2004) and comparable paediatric programmes (Committee on Psychosocial Aspects of Child Family Health 1997; Hagan et al. 2008), as well as the World Health Organisation (WHO, 2004), and the American Academy of Child and Adolescence Psychiatric Association (AACAP, Practice Parameters for the Assessment of Infants and Toddlers, APA, 1997) recommend the routine observation of parent-infant interaction in clinical work, early intervention, and research, stating “the importance of caregiver-child interactions for the survival and healthy development of young children” (Review by the WHO, 2004).

Therefore, it is not only important that GPs, paediatricians and psychiatrists of the future have time to get to know their ‘new parent’ and infant patients, but also that they have an awareness as to the importance and impact of the mother-baby relationship, and have developed observational skills in order to capture the subtle signs of a derailed early relationship (Balbernie, 1999). It is equally important that midwives, antenatal teachers and health visitors have time to develop a relationship with new mothers and their babies so that they can become aware of the issues which may present risks to the comfort and security of the coming/new baby as well as to the parents as individuals and as a couple (Young Minds, 2004). Once the baby has arrived, the relationships with every professional involved in the support, healthcare or

treatment of mother and baby, particularly in relation to any form of mental disorder, including postnatal depression (Day & Davis, 1999; Puura et al., 2002) are central to infant mental health. The earliest possible identification of mental health problems in both mother and child should lead to an expeditious referral for professional help. Community healthcare professionals point to the lack of formal training in the assessment of parent-infant relationships and the need for structured observational measures to assess the overall quality of the parent-infant relationship (Appleton et al., 2013; Beatty et al., 2011; Wilson et al., 2008). It is critical “to adopt a developmental perspective to understand processes underlying the individual pathways to adaptive and maladaptive outcomes” (Bornstein et al., 2012, p. 113), when assessing the parent-infant relationship. Consequently, it seems of even greater importance to “systematize our impressions of the child’s subjectivity” and create “sensitive measurement systems to identify changes that may go beyond symptomatic improvement” in order to assess risk in the parent-infant interaction, and define the need for intervention (Fonagy, 2003, p. 133).

Adult psychiatrists are more likely to focus on the mother or father alone, rather than the family and the mother-infant dyad specifically, and to see their patients (both men and women) predominantly as adult patients in their own right, in isolation from their parenting role and family context. They may well have little or no experience and/or training in the particular area of infant psychiatry and infant mental health. They may also lack an awareness of the potential impact of parental mental illness on infant development and on the early parent-infant relationship.

Similarly, pediatricians are more likely to focus on the physical health of the infant or toddler alone, rather than the family and the mother-infant dyad specifically, as they tend to see their small patients predominantly as patients in their own right. They may well have little or no experience and/or training in infant mental health and the development of the parent-infant relationship as well as attachment, let alone the potential impact of parental mental illness on infant development and on the early parent-infant relationship. Therefore, their similarly restricted, one-person focused perspective on the baby might create problems in observing the dyadic relational quality.

Consequently, training in adult psychiatry and psychotherapy, as well as in infant psychiatry and child and adolescent psychotherapy should focus on the quality of the early relationship and the prevention of psychopathology in the infant stemming from relationship disturbances and attachment disorders. The psychotherapeutic objective of parent and infant work might be the prevention of psychopathology (Fonagy, 1998) rather than treatment of infant mental health disorders.

These recommendations, informed by research, indicate that the quality of the parent-infant relationship is crucial for the infant's developmental outcome, as outlined in Chapter 1.

Government policies in many countries around the world emphasize the importance of early intervention, and a growing body of evidence points to the effectiveness of parent-infant psychotherapy in terms of improving both parental functioning (Cohen et al., 1999; Cohen et al., 2002; Granqvist et al., 2017), and fostering secure attachment relationships in young children (Barlow et al., 2013; Granqvist et al., 2017). Remarkably, this can often be attained via short-term parent-infant psychotherapy (Granqvist et al., 2017; Werner, Linting, Vermeer, & IJzendoorn, 2015).

The earliest possible identification of difficulties within parent-infant relationships, ideally within the first nine months (Feldman, 2016), has become a priority in health and social care over the last decade in order to prevent the development of psychopathology. This is supported by the recognition that early attachment experiences have wide-reaching implications for later development across the individual lifespan as well as across generations (Carlson, Sroufe, & Egeland, 2004; Lyons-Ruth & Jacobvitz, 2008; Sroufe et al., 2005; Weinfield, Sroufe, & Egeland, 2000). Furthermore, the rising awareness that early interventions may be effective in reducing later costs to society (Charles, Bywater, & Edwards, 2011; Heckman, 2005; McIntosh, Barlow, Davis, & Stewart-Brown, 2009) supports the clinical need to detect early risks and measure treatment outcomes, and efficacy, for parents and young babies (Sleed, 2013).

An increased understanding of the importance of early intervention generated a demand for assessment measures that can be specifically applied to this vulnerable developmental phase. Such measures should focus on the dynamic moment-to-moment interaction between infant and caregiver and highlight the concept that every infant-caregiver relationship is unique (Tronick & Beeghley, 2011). It is imperative to recognise that no relationship between parents and infants is perfect; yet from this imperfection, dyadic reparatory processes generate unique meanings, new ways of being together, and new meanings in relation to the world and to one's self (Tronick & Beeghley, 2011). The logical means by which to assess the quality of the individual parent-infant relationship is through the observation of the parent-infant interaction and the use of observational measures assessing resilience and risk within the relationship. Despite this recognition, many of the tools that are available for assessing the quality of parent-infant relationships are either focused on a specific quality of the relationship or solely upon the qualities indicative of risk. Measures providing a comprehensive

assessment of the global relational quality have either been too complex and time-consuming to train in and code because they have been developed for research, have been difficult to access due to unpublished manuals and missed training opportunities or only provide a limited basis of psychometric data. For an overview, see Chapter 2. It is therefore clear that measures developed for clinical use should be available to train in and use time efficiently by a wide range of professionals working with parents and babies.

9.2.2. The Implementation of the Routine Observational Assessment of the Parent-Infant Relationship in Infant Mental Health Contexts

Given the utmost importance of the earliest possible identification of difficulties within parent-infant relationships, and the rising awareness that early interventions may be effective in reducing later costs to society, the clinical need to detect early risks for parents and young babies should be supported by further research into the implementation of observational assessment of the parent-infant relationship from birth onwards. The implementation of the routine assessment is complicated by the fact that no standardized guideline exists for psychometric reviews of observational tools. Therefore, the criteria used in measure reviews to evaluate the validity evidence of the tools are debatable. Validity evidence is usually based on papers evaluating the psychometric properties of a measure with diverse methodological quality (Lotzin et al. 2015). Especially papers reporting the use of assessment tools in clinical samples, sample sizes are often too small and therefore might report inaccurate reliability and validity estimates (Charter, 1999, 2003). Therefore, implementation research should randomly select large representative clinical and/or general population samples. Multicenter studies would increase the sample size and improve generalization of the findings. Finally, guidelines defining and standardizing the criteria for evaluation of the quality of a tool should be developed in order to allow for an evidence-based selection of tools to assess the parent–infant relationship.

It might be one of the greatest challenges facing global infant mental health to take valid assessment tools and implement them in the everyday practice of professionals working with parents and babies. Research on health and community healthcare systems, such as implementation research will be crucial providing a basis for the context-specific, evidence-informed decision-making needed to make what has been found by research on the importance of assessment of the parent-infant relationship described in the last paragraph a reality in practice (see WHO, 2013). Specifically context plays a central role in implementation research. Context may include the social, cultural, economic, political, and legal, as well as the institutional settings of perinatal and infant mental healthcare, comprising various stakeholders and their interactions. The structure of healthcare systems, public healthcare providers and health insurances and the role of the private sector is particularly important for implementation research (Peters, Tran, & Adam, 2013).

The World Health Organization (WHO) has long advocated for greater embedding of research into decision making and called for more demand-driven research. With their guide on the importance of mother-child interactions, the WHO (2004) advocates

support for the implementation of a routine assessment of the mother-infant relationship. A further guide by the WHO (2013) supports the development of and demand for implementation research that is problem-focused, action-oriented and above all aligned with infant mental health system needs. The implementation of the routine observational assessment of the parent-infant relationship in order to detect early risk-factors and prevent future psychopathology clearly requires the engagement of a wide range of stakeholders and draws on multiple disciplines. It is a collective and collaborative endeavour, which should solve the ongoing dispute of what is essential to observe, which measure should be used and how to train multidisciplinary healthcare professionals from diverse professional training backgrounds accordingly but should set up specific programmes in order to encourage the collaboration, and facilitate the coming together of stakeholders across the broad spectrum of infant mental health systems in order to achieve what is defined by the World Association of Infant Mental Health's position paper on the rights of infants (WAIMH, 2016):

“Caregiving relationships that are sensitive and responsive to infant needs are critical to human development and thereby constitute a basic right of infancy. The Infant therefore has the right to have his/her most important primary caregiver relationships recognized and understood, with the continuity of attachment valued and protected--especially in circumstances of parental separation and loss. This implies giving attention to unique ways that infants express themselves and educating mothers, fathers, caregivers and professionals in their recognition of relationship-based attachment behaviors”.

9.3. Further Development of the Parent-Infant Relational Assessment Tool and Preliminary Research into its Inter-rater Reliability

The Parent-Infant Relational Assessment Tool (PIRAT) was developed by the Parent-Infant Project at the Anna Freud Centre in order to address the measurement gap for a clinical parent-infant relationship assessment tool (from birth to two years) that is grounded in psychoanalytic thinking. Chapter 3 of this thesis described the initial development of the Parent-Infant Relational Assessment Tool (PIRAT), and preliminary research into its reliability and validity. PIRAT offers a reliable framework to observe the quality of the parent-infant relationship by assessing a variety of relational aspects constituting resilience and risk. As described in Chapter 4, PIRAT Manual - Version 1.0 (Broughton, & the Parent-Infant Project, 2003) was refined and amended when introducing the manual to the present author (SH) and during the process of her reliability training by Dr Carol Broughton (CB).

Amendments included changes to the descriptors included in the infant-parent and parent-infant subscales in order to reflect the rising level of concern, detailed instructions for coding and the development of a standardised protocol for training and reliability testing. These amendments were a prerequisite for mostly good levels of IRR using PIRAT Manual - Version 2.0 (Broughton et al., 2012). Raters experienced in observing mothers and infants during play demonstrated satisfactory inter-rater reliability after the 3.5 day PIRAT reliability training. These raters' levels of IRR increased with each set of ten clips that they coded (set 1, set 2.1 and set 2.2) during the process of reliability testing, and they differentiated reliably between normative and concerning cases. In conclusion, the pilot study into PIRAT's inter-rater reliability provided evidence that PIRAT Manual - Version 2.0 could be used reliably as an observational measure and a risk assessment tool in order to differentiate between normative and concerning relationship qualities, by professionals experienced in working with parents and babies on the basis of professional experience as well as a 3.5 day reliability training. The pilot study evaluated the IRR of raters who were not experienced in parent-infant work or in observing parents interacting with their babies and found that those raters could not reach acceptable levels of IRR on the basis of a 3.5-day training course.

Finally, the request for a rating of the global relational quality, such as a total score of the infant-parent and parent-infant relational qualities, was taken into account and total mean scores for infant-parent and parent-infant subscales were developed. Final amendments, such as a global rating scale, were designed in order to provide PIRAT

users with an overall rating of the infant-parent and parent-infant relational quality on a 5-point rating scale.

9.4. The Development of PIRAT Global Scales and Pilot Studies into its Inter-rater Reliability

PIRAT Global Scales - Version 1.0 and 2.0 were developed in order to provide an overall rating of infant-parent and parent-infant relational quality based on the subscales comprised in PIRAT - Version 3.0 (Broughton et al., 2014a), as described in Chapter 5. This paragraph summarises the findings of pilot studies into PIRAT Global Scales inter-rater reliability (IRR) based on the 3.5 day PIRAT reliability training, which was adapted for PIRAT Global Scales.

The level of IRR of raters with the 'gold standard' improved as PIRAT Manual and PIRAT Global Scales Manual, the scale and coding system were improved whilst controlling for confounding variables, such as the training and reliability testing protocols, samples of clips used for training and reliability testing, and the professional background of each sample of raters.

IRR levels between CB and SH were found to be excellent (and were thereafter taken as the 'gold standard'). The IRR of health professionals experienced in observing parents and infants at play, based on a 2.5 day PIRAT reliability training course, plus one day of feedback and discussion of codings of a first set of ten video-clips, ranged from good to excellent. Furthermore, raters differentiated reliably between clinical and normative clips. Notably, all raters achieved higher levels of IRR on PIRAT Global Scales Manual 2.0 when compared to different raters on PIRAT Global Scales Manual 1.0 and PIRAT Manual - Version 3.0, in coding the same set of video clips.

The findings of the pilot studies into IRR evidence that PIRAT Global Scales - Version 2.0 (Broughton et al., 2016) can be used time efficiently and reliably as an observational measure, and as a risk assessment tool to differentiate between 'good enough' and concerning relationship qualities.

9.5. The PIRAT Global Scales Reliability and Validity Study

The first of the three chapters exploring the psychometric properties of PIRAT Global Scales, Chapter 6, sought to determine the reliability of PIRAT Global Scales, followed by aspects of reliability described in Chapter 7, focusing on the evaluation of PIRAT Global Scales' internal consistency. This was followed by the results of the research into PIRAT Global Scales' validity in Chapter 8.

9.5.1. Reliability

PIRAT Global Scales show good to excellent levels of IRR for single raters, as well as for an average rater. This was tested both ways in order to secure good levels of IRR for specific raters from various professional backgrounds, as well as of an average rater representative of the professionals PIRAT Global Scales were developed for. These findings clearly demonstrated PIRAT Global Scales reliability when used by professionals experienced in working with parents and babies in the field of infant mental health and perinatal mental health, with or without a psychoanalytic training, a parent-infant psychotherapy training or a psychiatric training.

The relevance of the Global Rating was confirmed by the fact that levels of IRR on the Global Rating Scale were higher than for the subscale ratings, both for single raters and an average rater. The Global Ratings showed slightly higher values for the Parent-Infant when compared to the Infant-Parent Global Rating, which corresponded with the impression given during the training, namely that participants found it easier to capture the global quality of the maternal interaction than the often subtler infant and more ambiguous interactional qualities.

Poor levels of agreement for single raters were limited to the subscales infant-parent 3 'Responsiveness to stranger', infant-parent 7 'Quality of contact: Clinging', infant-parent 10 'Quality of contact: Sexualized' and to infant-parent 10 'Sexualized' for an average rater. Poor levels of IRR for the parent-infant domain were limited to the subscales parent-infant 6 'Quality of contact: Intrusive' and parent-infant 8 'Quality of contact: Sexualized'.

The percentage of subscales showing poor ICC values was significantly higher for single raters compared to an average rater. This could be explained statistically, as average values would be expected to be more similar than single values. As all raters

were found reliable with CB and SH on their initial reliability testing, the variance of subscales with poor ICC values was examined in post-hoc analyses. Frequencies of gold standard ratings of single raters on the 0-4 PIRAT Global Scales rating scale for the subscales infant-parent 3 'Responsiveness to stranger', infant-parent 7 'Quality of contact: Clinging', infant-parent 10 'Quality of contact: Sexualized', parent-infant 6 'Quality of contact: Intrusive' and parent-infant 8 'Quality of contact: Sexualized' showed a low range as these subscales were mostly rated '0' 'no concern/not seen' and therefore could not become reliable statistically. Similar results were found for the average rater's coding of infant-parent 10 'Sexualized', as the frequency calculation showed a low variance with this subscale mostly rated '0' 'no concern/not seen'.

From a theoretical and clinical point of view, the subscales Infant-Parent 'Responsiveness to Stranger', 'Clinging' and 'Sexualized' and Parent-Infant 'Intrusive' and 'Sexualized' can be understood as indicators of risk, as they are in themselves already indicative of a severely disturbed relationship and may predict an insecure or disorganized attachment pattern (for a meta-analysis see Madigan, Bakermans-Kranenburg et al., 2006). Extreme forms of parental insensitivity may also result in disorganized attachment (Out et al., 2009). Notably, when frightening, frightened, dissociated and role-reversed behaviours were excluded from the AMBIANCE, the final score for the remaining atypical behaviours, such as highly insensitive, intrusive, and disrupted behaviours were still associated with infant disorganization (Lyons-Ruth, Bronfman, & Atwood, 1999). Moreover, the subscale 'Affective Communication Errors' of the AMBIANCE, which is most reflective of extreme insensitivity, was also related to infant disorganization in a recent study (Madigan, Moran et al., 2006; Out et al., 2009). These findings suggest that the subscales should not simply be excluded, although reducing IRR, as they might be strong risk indicators in rare cases. They are discussed further at the end of this chapter.

Research on the IRR for reliable and widely used measures assessing the parent-infant relationship (described in Chapter 2 and the discussion of the results on IRR reliability in Chapter 6), usually presents the absolute agreement between two raters over a sample of clips. In contrast to these measures, the PIRAT Global Scales reliability study tested the IRR of a group of eight professionals from various professional backgrounds, all experienced in working with parents and babies and in observing the parent-infant interaction at free play. This was in order not only to evaluate levels of single raters compared to an average Global Scales user, but also to determine the measure's effectiveness across a variety of professional backgrounds and workplace settings. The findings confirm Global Scales' reliability for use by health professionals in their workplace settings, within a theoretical framework based on the

psychoanalytic understanding of the early parent-infant relationship, to assess the quality of the interaction between parents and babies aged 0 - 12 months.

9.5.2. Internal Consistency

Internal consistency was determined by evaluating the inter-correlations of infant-parent and parent-infant subscales as well as the inter-correlations of PIRAT Infant-Parent and Parent-Infant Global Scales and their subscales. Results show similarly high internal consistency calculated for the 'gold standard' rating as well as for each single rater. Correlations of infant-parent and parent-infant subscales showed a range from no correlation at all to very high correlations, the latter would be expected as the theoretical constructs conceptualised within each subscale are essentially related to one another. The findings of theoretically related subscales demonstrated high effect sizes, whereas mostly medium effect sizes were found for subscale p-i 9 'Dissociation', and consistently small correlations were found for the following subscales, i-p 3 'Interest in stranger', i-p 7 'Clinging' and i-p 10 'Sexualized', or p-i 8 'Sexualized'. Interestingly, overall inter-correlations of parent-infant subscales were higher than for infant-parent subscales. From a methodological perspective, one would ideally expect a homogeneous scale with subscales correlating positively with one another, yet i-p 10 'Sexualized' correlated as at a low negative level with the total scale.

Subscales i-p 3 'Interest in stranger', i-p 7 'Clinging' and i-p 10 'Sexualized', or p-i 8 'Sexualized' were rated mostly 0 'no concern/not seen'. Therefore, these subscales were expected to show low subscale-scale correlations and result in a lower internal consistency. These subscales appeared to be 'difficult items to code' since the behaviour is rare or mostly not concerning. From a methodological point of view, one could discuss if those subscales, in particular the negatively correlating i-p 10 'Sexualized', should be deleted from PIRAT Global Scales in order to create a more homogeneous scale. The fact that even rarely observed sexualized behaviours, both in infant and in parent are understood as indicators for risk in itself, and the fact that the statistical deletion of i-p 10 'Sexualized' had an extremely small effect on α clearly speak against a deletion of the subscales rating sexualized behaviours.

The findings overall demonstrated excellent internal consistency, supporting the notion that Global Scales were measuring a homogeneous construct that is the overall quality of the parent-infant relationship, and satisfactory when compared to other measures assessing the quality of the parent-infant relationship.

Infant-Parent, Parent-Infant and Total Sum Score were also calculated. Their roughly normal, slightly right skewed and platykurtic distributions were typical distributions of clinical data. Findings demonstrated a high internal validity of Global Scales' Sum Scores.

The development of Sum Scores and their levels of internal consistency Infant-Parent, Parent-Infant Global Scale, and all 23 subscales combined, show excellent levels of internal consistency. Scales and subscales measured a homogeneous construct and therefore the development of Sum Scores was appropriate. Overall, values for subscale-scale correlations displayed good levels of positive correlation, apart from i-p 'Sexualized' and p-i 8 'Sexualized' correlating negatively. In the light of these findings the Pearson's correlations were re-calculated using Kendall coefficients in order to control for overly positive results created by computing errors when using Pearson's correlations for only a 5-point metric scale, but similar results were found.

As discussed in the previous section, the subscales observing sexualized behaviours in infants and parents were not homogeneous with the rest of the scale. However, a reverse scoring of these subscales would not be appropriate as generally for PIRAT Global Scales a higher value is indicative of a higher level of concern. Theoretical and clinical considerations regarding these findings are similar to those discussed for the IRR in the previous paragraph as these sexualized behaviours are part of atypical maternal and overly compliant infant behaviours, clinically thought to indicate severe risk of a derailed relationship development and therefore of utmost importance. However, from a clinical and theoretical perspective it is unclear why sexualized behaviours as defined by PIRAT Global Scales would correlate with positive aspects of the parent-infant relationship. This needs to be further evaluated.

9.5.3. Validity

An assessment tool's psychometric properties, in particular its validity is essential for its usefulness (American Educational Research Association, American Psychological Association, & National Council on Measurement in Education, 1999). There is a longstanding and ongoing debate between theorists who see construct validity as the dominant model, pushing towards a more unified theory of validity (Loevinger, 1957), and those who continue to work from multiple validity frameworks. More recently, psychologists have argued that predictive, concurrent, and content validities are

essential but construct validity comprises the whole of validity from a scientific point of view (Wieland, Durach, Kembro, & Treiblmaier, 2017). Evidently, construct validity can be misleading due to a range of problems in hypothesis formulation and experimental design, from hypothesis guessing, bias in experimental design (intentional or unintentional), defining predicted outcome too narrowly or confounding variables/covariates (Trochim, 2006).

The study into PIRAT Global Scales' validity provided further insight into the interplay between parental representations, parental psychopathology, the quality of the parent-infant relationship and the risk for relational problems. The implications that have emerged from this study into the reliability and validity of PIRAT Global Scales are summarised below.

Promising findings were obtained in determining the validity of PIRAT Infant-Parent and Parent-Infant Global Scales, and their Sum Scores. In line with expectations, correlations of the quality of the parent-infant relationship assessed with PIRAT Global Scales showed good levels of convergent construct validity with Emotional Availability. Particularly good levels of validity were found for the Infant-Parent Global Rating and Sum Score and the Emotional Availability Scales' child subscale scores, such as 'Child Involving' and 'Child Responsive', as well as for Parent-Infant Global Rating and Sum Score showing a good convergent construct validity correlating negatively with the EAS' parental subscales, such as 'Sensitivity' and 'Structuring'. These results reflected the findings on EAS' construct validity and cross-cultural applicability described in Chapter 8.

The findings also indicated good levels of construct validity of PIRAT Global Scales when compared with the quality of the parent-infant relationship as assessed with the Coding Interactive Behavior System, in particular the concept of 'Dyadic Attunement'. Whilst the results for Parent-Infant Global Rating and Sum Score indicate good construct validity with the CIB's 'Parental Positive Engagement', the Infant-Parent Global Ratings and Sum Score only showed fair construct validity with the CIB's 'Child Involvement'. The finding regarding the good construct validity with the well-validated CIB 'Dyadic Attunement' seems particularly pertinent for the Global Scales' relevance as an assessment tool used in clinical contexts, as PIRAT aims to focus on the dyadic quality of the parent-infant interaction. Compared to EAS and CIB PIRAT Global Scales provide a global rating of the parent-infant relationship for clinical use, as it was specifically designed for clinical use and therefore time-efficient to use and to train.

The findings pertaining to the early relational quality assessed with the CARE-Index presented a more complex picture, with relatively low but significant validity with the

CARE-Index. Infant-Parent and Parent-Infant Global Ratings and Sum Scores showed only fair convergent construct validity with the CARE-Index's subscales, parental 'Sensitivity', infant 'Cooperation' and infant 'Non-responsiveness'. The results implied some concurrence of categories and constructs included in Global Scales and CARE-Index, which seems adequate: there is an overlap of theoretical constructs between both measures but clearly quite some differences as well, therefore the correlation between PIRAT Global Ratings and CARE-Index's subscales are lower than compared to EAS and CIB. Further research will be needed in order to evaluate the differences between Global Scales and CARE-Index on subscale level.

Regarding the indicators of risk in the early relationship, such as signs of disorganized attachment patterns, a low level of parental reflective functioning and high parental stress, the findings indicated a rather different picture from what was expected. In line with expectations, all Sum Scores showed a fair, significant level of construct validity with 'Disorganized Attachment' as assessed with the Strange Situation Procedure, in particular the dichotomised variable 'Disorganized Attachment: 1: yes/ 0: no'. The 'Disorganized Scale', ranging from 1 'no sign of disorganization' to 9 'definite qualification for D attachment status', was not expected to become significant, as several categories would not be coded given the sample size and characteristics.

However, unexpectedly the Sum Scores, as well as Global Ratings, correlated negatively with 'Disorganization', which could not be explained by either the scaling, the definition of the variables for disorganization, nor by data entry errors (in the light of these findings all data were double checked thoroughly). Therefore, findings were discussed in more detail with the researcher who managed the RCT data coding and entry, in order to find an explanation for negative correlations between PIRAT Global Scales relational quality and disorganized attachment patterns. Preliminary enquiries indicate that, while the associations between other measures within the RCT are as expected, the SSP coding did not seem right compared to sensitivity measures, and the SSP codings of cases deemed to be most high risk did not fit well with her knowledge of the mothers and babies having followed them up for a year (Michelle Slead, personal communication, 2017).

The link between the parent-infant relational quality assessed with Global Scales and attachment will be subject to future research, in particular disorganization, as disorganized attachment predicts developmental outcome and future psychopathology (for details see Chapter 1).

In contrast, in line with expectations, Parent-Infant Global Rating and Sum Score showed a fair convergent construct validity with 'reflective functioning on the PDI (RF)'

whereas the Infant-Parent Global Rating and Sum Score only displayed a low level of construct validity with it. This is consistent with findings for other measures assessing parent-infant interaction, indicating fair levels of concurrence of parental domains and parental RF.

As PIRAT Global Scales are an observational measure designed to identify risk in the emerging parent-infant relationship and rate the observed dyadic qualities of parent-infant interaction, rather than rely on what parents report in clinical interviews or questionnaires (Salomonsson & Sled, 2010), PIRAT Global Scales may only show low concurrent validity with self-report questionnaires, such as the Parenting Stress Index. Consequently, it was in line with expectations that results on the 'Maternal Stress in Parenting' total score reported on the Parenting Stress Index (PSI) showed non-significant levels of concurrent validity. The expected disagreement between the actual observed relational quality and parental perceptions of infant behaviours and functioning (as described by Sled, 2013), was confirmed by the marked difference between highly significant correlations of PIRAT Global Scales with other observational measures of parent-infant interaction, and no significant concurrence with the level of maternal stress evaluated by the Parenting Stress Index.

9.6. Limitations

Whilst the findings on PIRAT Global Scales' psychometric properties hold considerable promise, they come with several important limitations and related considerations. These limitations are discussed below.

Under the limitations of sampling, there are several issues due to the limited resources available. Firstly, as noted throughout the thesis, the age range of the infants was limited to 0 – 12 months due to the age of infants at intake for the RCT intervention study which generously provided material for coding. Secondly, the sample is a clinical sample with no controls included, and therefore the comparison of clinical and normative cases is missing. Thirdly, although this clinical sample shows a good distribution of interactional qualities as assessed by the Emotional Availability Scales, the sample size and characteristics limit the differences that might have been found within a larger sample. For example, further evaluation of the categories indicating uncommon but crucial risk, such as dissociative and sexualized behaviours in infants and parents, was not feasible as these behaviours rarely occurred even within this demographically diverse, urban population (with areas of high levels of socioeconomic deprivation from three hospital-based perinatal psychiatry units and a community children's centre). Despite the sample's diversity it was primarily composed of first time mothers, who were living in a committed relationship. Finally, the sample only included mothers and their infants and the findings were therefore limited to PIRAT Global Scales' reliability in assessing the quality of the mother-infant relationship, not a father-infant or partner-infant relationship.

Whilst the sample of raters was chosen to be heterogeneous in the sense of representative of professionals from the various backgrounds the PIRAT Global Scales were developed for, the findings do not allow conclusions to be drawn regarding raters from specific professional or cultural backgrounds. Raters could not be representative of all professional groups working with parents and infants, and the importance of the cultural background of raters, which may have impacted on their ratings of specific behaviours, for example 'Intrusiveness', was not further evaluated. Experiences from PIRAT Global Scales trainings suggest that raters from Northern Europe tend to overrate maternal intrusiveness (in comparison to our 'gold standard'), as well as infants' lack of pleasure and avoidance, in parent-infant dyads from Southern European and African cultural backgrounds. This seems similar to what colleagues reported regarding northern European and southern European/Mediterranean cultures, with more restricted emotional expressions in the former and more expansive

expressions in the latter (see 9.7.3.). Another interesting finding from trainings and reliability testing addresses cultural differences and the way parents play, particularly when they don't play where play would be expected from the raters' cultural perspective. Cultural differences in the way parents play are therefore an important topic in the discussions of codings during training, in order to sensitise participants for the impact of their individual cultural background when observing parents and infants interacting with each other.

The current research into PIRAT Global Scales' psychometric properties did not further explore the non-homogeneous aspects of the coding system, given that i-p 10 and p-i 8 'Sexualized' were correlating negatively with the other subscales. A reverse scoring of the sexualized subscales was not tested. The findings cannot tell us whether these two subscales would show similar results in high-risk samples, where sexualized behaviours might be more often observed.

Reasons for low IRR on the subscale level should be further evaluated, as it may be low due to various causes. Poor psychometric properties of a scale, poorly trained coders, poor quality of the video clips, difficulty in observing or quantifying the construct of interest, the conceptualisation of the criteria rated, or other reasons, such as the age of the baby are among the most common probable reasons.

The psychometric properties of the scale, particularly for risk indicators such as sexualized behaviours, might need to be anchored within developmental phases within 0 - 24 months, as lack of anchoring could lead to poor reliability and validity.

The current research into PIRAT Global Scales' psychometric properties sought to establish PIRAT Global Scales' reliability and validity, and therefore did not further explore the impact of specific infant-parent and parent-infant subscales on the Infant-Parent and Parent-Infant Global Rating. Future research may further study the details of these correlations on a sample of wider age range from 0 – 24 months.

Moreover, future research may evaluate the validity of PIRAT Global Scales and other observational measures on subscale level, such as the Care-Index subscales 'Parent Controlling' and 'Child Unresponsiveness' which, for example, could show a significant correlation with PIRAT Global Scales' intrusive (p-i) and avoidant (i-p). In addition, the re-examination of subscales perhaps when subjected to factor analysis will produce reliable factors that can be clinically helpful.

Furthermore, the stability of the theoretical constructs assessed by PIRAT Global Scales was not yet established over time, across ages, gender and various samples. Future studies should therefore evaluate PIRAT Global Scales' test-retest reliability, as we don't know yet whether parent-infant/infant-parent dyadic interaction are stable over

time which is essential for PIRAT Global Scales' clinical usability.

The second set of limitations lies with the measures used. A combination of observational measures, parent-report and external ratings were used to evaluate PIRAT Global Scales' validity. It follows that some of the findings reported might be confounded by the source of data used. For example, there were strong links between maternal psychopathology, adult attachment and PDI narratives, which explicitly revealed emotional distress (helpless states of mind), but the links between these measures and ratings of parent-infant interactions were weak (Fonagy et al., 2016). Externally rated measures of maternal psychopathology (such as clinician rated diagnoses) and adult attachment (such as the Adult Attachment Interview) might have found stronger links between these constructs and parent-infant interactions. Parent self-report questionnaires may be useful screening tools for parent-infant dyads at risk of relational difficulties but may not be sensitive to detecting problems when certain unconscious states of mind are prevalent in the mother's representations, as described by Sled (2013). The further evaluation of the extent to which PIRAT Global Scales capture the impact of maternal representations on the observed behaviour will be subject to future research, see 9.8. Moreover, measures assessing particularly atypical and disrupted parental behaviours found to impact on the development of infant disorganized attachment, such as the FR Coding System, the AMBIANCE, DIP or the recently developed Assessment of Representational Risk (ARR; Sled, 2013), were not included in the study.

A further limitation is the 'gold standard' rating on PIRAT Global Scales used to establish inter-rater reliability and validity. Even though the so called 'gold standard' rating evolved over a process of double coding all interactions, any detailed notes of the coding process and the level of confidence (for example if one of the trainers felt unsure about the coding), were not qualitatively analysed as part of the study protocol. Whilst the level of confidence in the Infant-Parent and Parent-Infant Global Ratings was initially included in the protocol (in order to compare it to the level of inter-rater reliability calculated), missing data and a tendency to always opt for lower confidence scores rendered this data of little use for further evaluation.

Another limitation is the stability of inter-rater reliability with the 'gold standard' over time. The level of IRR of some raters for the study into inter-rater reliability decreased from reliability testing (for results see Chapter 5) to the establishment of IRR for PIRAT Global Scales on the larger sample (for details see results for single raters in Chapter 6). These changes confirm our experiences from previous trainings and participant's

feedback later on when using PIRAT in their clinical work. There seems to be a learning curve during training indicating best results when completing the reliability testing and coding the last 10 clips. This might be due to the process of learning something new and training effects just after completing the training, and the attunement of raters with their trainers (and therefore the 'gold standard'), as well as a kind of 'parental holding function' in the training context which needs to become internalised in the progress of learning and over the process of using PIRAT Global Scales in participant's own workplace settings.

A final limitation concerns the results of the Strange Situation Procedure, in particular the coding of disorganized attachment patterns. In line with the hypothesis, PIRAT Global Scales Sum Scores showed a fair level of association with 'Disorganized Attachment', but they correlated negatively. As indicated before in paragraph 9.5.3., these findings were discussed with the group that managed the RCT data coding and entry, in order to find an explanation for negative correlations between PIRAT Global Scales relational quality and disorganized attachment patterns. Preliminary enquiries indicate that the SSP coding did not seem right.

Since disorganized attachment patterns are known to be highly relevant for the future sensorimotor, emotional and relational development of infants, a re-coding of the PIP RCT's SSP on disorganization might be necessary in order to test a link between the relational quality assessed with Global Scales and secure and disorganized attachment. Furthermore, only the Sum Scores correlated significantly with disorganization, which can be interpreted as Global Scales not representing disorganized behaviours well enough, or the sample size being too small. This makes an argument for the current practice of first of all rating subscales, and secondly the Global Scales and stick to that coding protocol, in order to capture the impact of behaviours linked to attachment disorganization, such as dissociative behaviour (Schuengel, 1997; Schuengel, van IJzendoorn, Bakermans-Kranenburg, & Blom, 1999) and FR behaviours (see Chapter 1). This will be subject to future research.

9.7. Theoretical, Research and Clinical Implications, and Outstanding Issues

A range of issues and implications in relation to the studies reported are summarised below, divided into five subsections. Firstly, aspects of relational quality of the parent-infant relationship in the context of maternal psychopathology, secondly, findings on mother-infant and father-infant interactions, thirdly, cultural aspects of the assessment of the parent-infant relationship, followed by the importance of the assessment of the parent-infant relationship in clinical work, concluded by a discussion on relevance of the implementation of a routine observational assessment of the parent-infant relationship and accompanying research.

9.7.1. Relational Quality and Maternal Psychopathology

From a clinician's point of view one crucial question regarding the assessment of the parent-infant relationship is how infant and parent regulate affective states, and in particular how the infant regulates negative affective states and feelings of insecurity, and how the parent co-regulates these affective states. Based on Bion's theories put forward in 'Learning from Experience' (Bion, 1962b) an infant develops the capacity to regulate negative affective states (i.e. anxiety, anger, frustration) and to endure insecurity within the emotionally attuned and holding parent-infant relationship. Ideally, infants develop a capacity to explore the world around them in the zone of proximal complexity on the way to achieve the next developmental milestone, and to experience insecurity in the context of a secure parent-infant relationship and finally integrate new experiences. Infants who cannot establish the capacity to regulate insecurity due to either emotionally unavailable, neglecting, possibly traumatized, overwhelming or overprotective parents, will frequently enter states of undifferentiated arousal. Levels of undifferentiated high arousal create overwhelming anxiety, which results in either withdrawal or desperate fighting in order to deal with the feeling of being unable to cope. Bion's theoretical approach delineates the further development of infants who cannot cope with the feeling of insecurity as either anxiously withdrawn or high-risk seeking, and clinical experience supported his theoretical concept (Bion, 1962b; Gries, 2017). According to Bion two coping strategies are predominant from early infancy onward and clinical assessments found those strategies to be observable in the early parent-infant relationship. The observation of the relationship can capture signs of

mismatch and differentiate between a global mismatch, and specific areas of mismatch in the parent-infant interaction. The clinician aims to pinpoint areas of relational mismatch in order to answer questions, such as: 'What constitutes disruptions in the interaction?', 'Are there specific contexts in the interaction triggering disruptions?', 'Are there specific aspects in the infant's liveliness which trigger parental dysfunctional and atypical behaviours?' and 'How does the infant react to maternal atypical behaviour and disruptions within the interaction?.'

Understanding these and other behaviours in terms of mental states is defined as 'reflective function' (Fonagy et al., 1991a; Fonagy & Target, 1997). Reflective functioning has been shown to contribute to the capacities for affect regulation, impulse control, self-monitoring, and the experience of self-agency (Fonagy & Target, 1997).

A study by Sled (2013) found that the overall reflective functioning (RF) score can be used confidently as a single indicator of the parent's mentalizing capacity (Slade et al., 2004). Research on the validity of the Parent Development Interview (PDI) RF coding system demonstrated construct validity of RF in relation to maternal and infant attachment status (Slade et al., 2005), maternal behaviour (Grienenberger et al., 2005; Schechter et al., 2008), maternal psychopathology (Schechter, 2003; Schechter et al., 2005), improvements regarding maternal attributions of their child (Schechter et al., 2006), and predictive validity for treatment change (Suchman et al., 2008, 2010, 2011). Research on maternal psychopathology linked maternal RF with impairments in mentalizing capacities: namely depression, somatisation, phobic anxiety, paranoid ideation, and psychoticism (Brent, 2009; Brune, 2005; Liotti & Gumley, 2009; Luyten et al., 2012; Moriguchi et al., 2006; Uekermann et al., 2008; Wang et al., 2008).

The PDI (Slade, Aber et al., 2004) provides a rich insight into mothers' representations of their relationship with, and attributions to, their baby. The analysis of parental representations focuses on the metacognitive capacity for RF as revealed within the narratives (Schechter et al., 2005; Slade, Bernbach et al., 2004). The PDI takes into account the process of thinking about the relationship and how this is shown in the narrative, rather than focusing on the content in and of itself. This method of assessment has proved useful in the detection of problems within the parent-infant relationship and in developing a theoretical understanding of how they evolve and are maintained (Sled, 2013). This research posits that the content of what mothers say may be an important indicator of the quality of the relationship and may provide a broader understanding of the nature of this relationship than that of observational assessment alone. These findings hold interesting theoretical and clinical implications for future research on the validity of Global Scales, as maternal attributions to the baby have a significant impact on the overall relational quality rating.

Measures assessing the mother's/father's representations and attributions to their child would further illuminate whether Global Scales capture the impact on the quality of the parent-infant relationship well enough. PIRAT Global Scales may not be sensitive to detecting certain states of mind prevalent in the mother's representations but should certainly capture the impact of non-conscious and unconscious states of mind, such as maternal enmeshment, distorted and disengaged representations and defensive idealisation of their relationship with their baby, and negative attributions impacting on their observable interactive behaviours with their baby. From a clinical point of view, it will be particularly important to explore how Global Scales relate to measures that code parental representations of the parent-infant relationship, such as the Working Model of the Child Interview (WMCI; Benoit, Zeanah, Parker, Nicholson, & Coolbear, 1997). WMCI classifications have been found to distinguish infant clinical status in mothers of infants with clinical problems who had representations of their infants that were significantly more likely to be classified as distorted or disengaged (Benoit, Zeanah et al., 1997). In addition, the severity of maternal PTSD has been shown to be significantly associated with 'non-balanced' mental representations within a traumatised sample (Schechter et al., 2005). Finally, studies have shown significant concurrent and predictive concordance between WMCI and infant attachment classifications (Benoit, Parker et al., 1997; Zeanah, Benoit, Hirshberg, Barton, & Regan, 1994).

In addition to further exploring how parental representations influence the observed relationship, another important clinical focus is the detailed evaluation of how atypical maternal behaviours impact on the global parent-infant relational quality. As atypical maternal behaviours indicate risk within the actual parent-infant relationship, as well as for the infant's attachment development, these behaviours (as described in Chapter 1) are particularly important for the assessment of the overall relational quality.

The association between maternal depression and the quality of parent-infant interactions, as well as the influence of maternal reflective functioning, and their impact on the infant's attachment development, need to be further explored as research found two atypical behavioural manifestations of maternal depression in the interactions between mothers and their babies - intrusion and withdrawal (Lyons-Ruth, Lyubchik, Wolfe, & Bronfman, 2002; Tronick & Reck, 2009). Research further identified that extreme forms of parental insensitivity may result in disorganized attachment (Out et al., 2009). Indeed, when frightening, frightened, dissociated and role-reversed behaviours were excluded from the AMBIANCE, the final score for the remaining atypical behaviours was still associated with infant disorganization (Lyons-Ruth, Bronfman, & Atwood, 1999). The AMBIANCE subscale 'Affective Communication

Errors', which reflects extreme insensitivity, was also related to infant disorganization (Madigan, Moran et al., 2006). Furthermore, two studies on the relationship between FR behaviour and infant disorganization showed that the subscale 'Direct Indices of Dissociation' was particularly predictive of infant disorganization (Abrams et al., 2006; Schuengel, 1997; Schuengel et al., 1996; Van IJzendoorn et al., 1999).

These findings imply that it will be important retaining the rarely coded PIRAT Global Scales subscales observing signs of risk in the parent-infant relationship, such as infant-parent 3 'Responsiveness to stranger', infant-parent 7 'Quality of contact: Clinging', infant-parent 10 'Quality of contact: Sexualized', parent-infant 6 'Quality of contact: Intrusive' and parent-infant 8 'Quality of contact: Sexualized'. In particular, the connection between atypical maternal behaviours included in the Global Scales' Manual and those assessed by the measures above and outlined in Chapter 2, might constitute an additional focus for future research.

9.7.2. Mother-Infant and Father-Infant Interaction

Although fathers or other partners, such as a same-sex co-parent or a resident grandparent, are important for their children's development, they are often not included in research on the parent-infant relationship, especially regarding families at risk (Rudolf, Eickhorst, Doege, & Cierpka, 2015). For simplicity of expression fathers will be used to refer to such partners in parenting generally. This may be partly due to the fact that parents might have separated and consequently fathers are often less, or not at all, present in their baby's life. Results on the impact of fathers on the development of their children are rare and sometimes findings are contradictory (Lamb, 2010; Lamb & Tamis-LeMonda, 2004). Particularly in the field of early prevention, and parent-infant psychotherapy, the positive influence exerted by the father can mitigate life strains such as stress, social isolation and maternal psychiatric illness, and facilitate a healthy development of the infant (Lamb, 2010; Rudolf et al., 2015). Furthermore, fathers are considered to be important because of the unique ways they interact with their infants and toddlers, in particular through play engagements focused on physical contact and/or joint physical activity. Fathers have a greater tendency to be directive in play, while mothers have a greater tendency to follow an infant's lead in play. During rough-and-tumble play, fathers excite, surprise, and momentarily destabilise children. Father's play tends to challenge and support the exploration of the surrounding environment while at the same time providing protection by imposing limits (Tamis-LeMonda, 2004). They encourage risk taking while simultaneously protecting their child

from danger, in short, fathers foster children's 'openness to the world.' Father's influence is contrasted by the mother-child attachment relationship, which aims to calm and comfort rather than arouse (Paquette, 2004; Paquette, Carbonneau, Dubeau, Bigras, & Tremblay, 2003). This reflects two adaptive and complementary systems underlying the attachment relationship, one supports proximity to the caregiver for purposes of protection and comfort, the second leads to exploration of and adaptation to the environment (Tamis-LeMonda, 2004). Moreover, the attachment relationship with the father can serve as a resilience factor when the mother-infant relationship is burdened by maternal psychopathology.

To date, none of the assessment tools has been thoroughly validated with mother-infant and father-infant samples. Thus, the reliability and validity of these tools to assess the father-infant relationship is unclear. Research on the father-infant interaction so far found conflicting results regarding the appropriateness of domains developed to assess the mother-infant interaction when used to investigate the father-infant relationship (Aksan et al. 2006; Harrison, Magill-Evans, & Benzies, 1999; Nakamura, Stewart, & Tatarka, 2000). For example, Aksan and colleagues (2006) showed similar but nevertheless distinct patterns of mutually responsive orientation, confirming that each parent and child co-construct a distinct relationship, which reflects a unique history of the child's relationship with each parent. Attachment research found that infant-father attachment security differed from infant-mother security (Grossmann, Grossmann, Fremmer-Bombik, Kindler, & Scheuerer-Englisch, 2002). The evidence suggests that father's observable sensitivity in interactions with their infants during the first year impacts on the quality of infant-father attachment relationship. Fathers' personality and attitude towards fathering and family, as well as fathers' participation in infant care were associated with infant attachment security to fathers (Grossmann & Volkmer, 1984; Grossmann et al, 2002; Horn, 2000). In line with previous findings, attachment research showed that the infant-mother attachment and fathers' play sensitivity predicted children's internal working model of attachment at age 10, and father's sensitivity at play predicted dimensions of adolescents' attachment representations (Grossmann et al., 2002). Therefore, fathers' play sensitivity seems a better predictor of the child's long-term attachment representation than the early infant-father attachment. Findings from attachment research confirm that both parents shape their children's attachment security but each in his/her unique way. Therefore, the best prediction for later psychosocial functioning of the children was derived from infant-mother and infant-father attachment combined (Easterbrooks & Goldberg, 1990; Suess, Grossmann, & Sroufe, 1992; Grossmann et al., 2002) This may be similarly

true for the prediction of attachment derived from the assessment of the parent-infant relationship.

The reviews in Chapter 1 and 2 clearly showed the predominance of maternal over paternal influences on the baby in theory, research and assessment of the parent-infant relationship. Therefore, it is imperative for the further understanding of the early relationship to focus on the third person, such as the father or other partner or caregiver, and their impact on the early relationship.

9.7.3. Cultural Aspects Regarding the Assessment of the Parent-Infant Relationship

Human beings are fundamentally cultural beings. We acquire our ability to adapt to our environment through developmental processes that are shaped by culture, and we live within culturally constructed systems of shared meaning. The concept of culture refers to shared beliefs, attitudes, values, and practices that are more than temporary, and are transmitted across generations (Emde, 2007). Clearly, then, culture must be of central concern to mental health. Clinicians tend to become aware of culture through the recognition of differences from their own culturally based expectations, and there is a growing body of research on the features of culture that are prominent in the assessment of infant mental health (Emde, 2007), and mental health in general (WHO, 2008). In its broadest sense, culture encompasses humanly constructed and transmitted dimensions of social life. From birth onwards, the process of socialization is a process of adaptation to a system of symbols and values of the social groups to which one belongs (Kirmayer & Swartz, 2013). In a narrower sense, culture is also used to refer to the identity, traditions and the way of life of a specific group defined in terms of ethnicity, descent, religion, or other social characteristics (Kirmayer & Swartz, 2013). Although they are culturally constructed categories, features like race, ethnicity, religion, and occupational identity are social facts with powerful impact on health (Fernando, 2010). Therefore, the specific aspects of social identity and cultural background of parents and infants are important considerations for mental health and infant mental health. A cultural approach to infant mental health should bring together insights from anthropology, psychology, sociology, and related fields to understand the social underpinnings and local variability of infant mental health problems, their prevention and treatment.

While there are clearly some universal qualities to the early parent-infant relationship, cultural variation in the expression of parents and infants when interacting with one another has an important impact on the observed and assessed quality of the relationship. Expression and the adaptive use of emotions have a particularly significant impact on the interaction. Take the differences, for example, between northern European and southern European/Mediterranean cultures, where it is commonly held there are more restricted emotional expressions in the former and more expansive expressions in the latter (Emde, 2000). Cultural differences in emotional expressions no doubt contribute to differences in the way parents play, and the rating of the relational quality, e.g. maternal intrusiveness and controlling behaviour at play. Similar to the differences in the distinct way mothers and fathers play with their infants, parents from diverse cultures might play in very different ways or might not play at all were play would be expected. Furthermore, there is a possibility that some cultural styles to relate to the baby actually are disruptive, intrusive or insufficiently stimulating, as not all cultures are necessarily equivalent. The work of several colleagues, such as Patricia Crittenden, Sheri Madigan and Bob Emde, as well as the experience gleaned from PIRAT and Global Scales trainings, suggest that raters sometimes struggle to take these cultural differences in maternal interactions into account when rating the parent-infant relationship. This may on some occasions result in ratings which are skewed, such as a sensitive and good enough interaction from a Finnish mother playing in a very low key, quiet and well-attuned manner with her baby, being rated as disturbingly depressive (indicating risk), or an Italian mother playing very actively, and talking a lot, in a high pitched, loud voice, also well-attuned with her baby, being rated as being extremely intrusive and therefore of concern (Patricia Crittenden, personal communication, 2015). The rating might not only depend on the cultural background of mother and infant, but also on the cultural background of the rater and his/her internalised representations of a well-attuned interaction. The experience from PIRAT trainings teaches us that raters from diverse cultural backgrounds and countries demonstrate a very different understanding of what is going on in the dyadic parent-infant interaction. And as culture clearly influences parent–infant interaction (Bornstein et al., 2012), further evaluation might clarify whether observational tools for measuring parent–infant interaction, such as PIRAT Global Scales represent similar interactional constructs across cultures.

Psychometric instruments, which have been shown to be reliable and valid in one cultural context may hold potential for benefiting clinicians and researchers in other cultures, although the validity can only be assumed with supportive research (Arnold & Smith, 2013). With this in mind, test translation and cross-cultural use of psychometric

tools are based on methodologies that can assist researchers in choosing how to best address the evaluation needs of ethnically diverse patients and clinicians. Therefore, valid assessment across cultures requires qualitative as well as quantitative research to investigate the cultural relevance of a construct, a careful translation and adaptation of a measure, followed by pre-testing and validation across diverse cultures (for an overview see Prince, 2013). The translation of PIRAT Global Scales into other languages is already becoming part of the cross-cultural validation of the scales. To begin with, and given the present author's cultural background, Global Scales were translated into German by the present author. The process of adaptation and translation of an existing measure should focus on semantic and technical equivalence (Prince, 2013). The process of translation and back-translation therefore followed the recommendations of Brislin (1970, 1986), more recent papers on cross-cultural research (Cha, Kim, & Erlen, 2007; Jones, Lee, Phillips, Zhang, & Jaceldo, 2001; Maneesriwongul & Dixon, 2004; Peña, 2007), and the protocol the World Health Organization has developed for translations of its English-language assessments to be approved for use in other settings, as this probably represents the 'best practice' at present. World Health Organization defines the overall goal to achieve different language versions of the English instrument that are conceptually equivalent in each of the target countries/cultures (WHO, 2008). The instrument should practically perform in the same way and focus on cross-cultural and conceptual, rather than on linguistic/literal equivalence (WHO, 2008)

'Established' translation practice in research is often 'by no means good practice' (Harkness, Villar, & Edwards, 2010) as the analysis of science and research translations reveal a number of problems:

1. Scale problems, warranting a change in the wording of the scale, including
 - a) translation errors
 - b) content not understood as intended, and
 - c) differences between the original scale and the translated scale.

Therefore, it seemed increasingly important to establish a 'best practice' approach on professional foreign language translations of observational scales in order to prevent confounding translation errors with rater-context problems, such as unfamiliarity with the scale, lack of knowledge and experience, and assessments based on a film vignette (Andersen, Jylli, & Ambuel, 2014).

Back-Translation for Cross-Cultural Research (Brislin, 1970; WHO, 2008) is seen as best practice in order to fulfil the requirements for professional translations and cultural adaptation of observational measures. This involves two bilingual translators, one translating from the source (English) to the target language (German) and the second blindly translating back from the target to the source language. The two versions of the

scales in the original language are then compared to each other, looking at comparability of language, similarity of interpretability (Sperber, Devellis, & Boehlecke, 1994) in order to secure the quality and equivalence of the translation. If the two versions of the original language are not identical, further conference between both translators is needed to clear up errors in translation and content.

Following this protocol, PIRAT Global Scales were translated into German by the present author. The back-translation into English was carried out by a psychoanalyst of German origin living in the US and holding a PhD in English literature, familiar with the psychoanalytic language used in PIRAT. Furthermore PIRAT Global Scales reliability training was translated into German. For an excerpt of the German translation of PIRAT Global Scales – Version 2.0, see Appendix 6 (for copyright reasons, and because that work is not part of the main studies reported here, the full translation of the German Manual is not included in the Appendix of this thesis).

Future research will have to apply Global Scales' ratings to a variety of samples, as well as comparing raters from various cultural backgrounds, in order to evaluate cultural discrepancies in assessing the parent-infant relational quality. This focus of research is even more relevant today, given our globalized world and the number of mothers experiencing motherhood in migration (Leuzinger-Bohleber et al., 2016; Rickmeyer, Lebigier-Vogel, & Leuzinger-Bohleber, 2017; Rickmeyer et al., 2015), and the healthcare workers and therapists inexperienced in supporting and treating mothers and babies from specific cultural backgrounds.

9.8. Future Directions

Given the limitations of this study described in the earlier section, it seems evident that much remains to be explored regarding the applicability of PIRAT Global Scales. This subsection summarises directions for future research emerging from the discussion of the findings described in Chapter 9 thus far. For ease of reading the section is organised by topics for future research.

Current PIRAT Global Scales coding protocol

There are several arguments for the current practice of coding all subscales in a first step, and in a second step code the Infant-Parent and Parent-Infant Global Rating, such as to capture the impact of specific infant and parental behaviours linked to the quality of the parent-infant relationship (see Chapter 1). Given the fact that some of the findings discussed in the previous sections show high levels of validity for the Sum Scores as well as for PIRAT Global Ratings, it will be a major question if Global Ratings can be calculated from subscale codings. From a PIRAT Global Scales user's point of view it is certainly interesting to know if the summation of infant-parent and parent-infant subscale codings will add further information to the assessment, allow for better comparability with other measures, or allow users to actually sum up their subscale codings in order to arrive at the Infant-Parent and Parent-Infant Global Rating. These questions will be subject to directions in future research.

Videotaped versus live observations

The IRR of Global Scales coded on videotaped (as well as 'live') observations in a clinical setting requires evaluation, since PIRAT was originally conceived to be used in both ways.

Stability over time

Future studies should evaluate PIRAT Global Scales' test-retest reliability in order to see whether parent-infant/infant-parent dyadic interaction are stable over time as this is essential for PIRAT Global Scales' clinical usability. Therefore, the test-retest reliability of PIRAT Global Scales should be established for various samples of parents and infants in order to test Global Scales' stability over time.

Sensitivity to change

Although Global Scales are essentially a clinical assessment tool that can be rated from 'live' observations or videotaped interactions, they have the potential to be used as an evaluation and outcome measure for early intervention in various professional contexts. As the theoretical background is heavily based on psychoanalytic thinking about the parent-infant relationship, it may be particularly suitable as a measure for psychoanalytically informed interventions, such as psychoanalytic parent-infant psychotherapy. However, further research is required in order to determine whether Global Scales are sensitive to change and to evaluate its usability as an outcome measure.

Predictive validity

The link between the parent-infant relational quality assessed with Global Scales and attachment security or disorganization will be subject to future research, as results regarding the construct validity of Global Scales and 'Disorganization' and EAS, and EAS' prediction of attachment security point in this direction. The association between atypical parental behaviours and infant attachment has been evidenced through various studies, for details see Chapters 1 and 2. Additionally, Global Scales should be incorporated into longitudinal studies of attachment so that results can not only be compared with those from laboratory procedures, in particular the SSP, but the predictive validity of the measure could be developed. For the establishment of Global Scales' predictive validity it should be acknowledged that a measure using video-clips of 6–8 minutes of free play observation would not be able to predict attachment, either because a short free play situation might not activate the infant's attachment system to the extent needed to observe certain attachment behaviours, or because such a brief interaction may not be sufficient to reveal individual differences in relational capacities. Waters and Deane (1985) suggest a minimum of 2–3 hours of direct observation under naturalistic circumstances before assessing attachment using the Attachment Q-Sort.

Risk assessment and the development of a clinical cut-off score

While this study found evidence that Global Scales can be used as a risk assessment tool in infant mental health, future research will be needed to further develop its relevance for assessing risk in various samples and across a range of workplace settings. Moreover, future research will be required to develop a clinical cut-off score to identify parents and infants in need of intervention and confirm the theoretical cut-off for concern included in the rating scale, by comparing clinical and normative samples.

Relational quality in infancy and atypical maternal behaviours

As atypical maternal behaviours, such as dissociation, avoidance, frightened/frightening, sexualized behaviours, hostility and helplessness, intrusion and disruption, included in the Global Scales' Manual, indicate risk within the actual parent-infant relationship, the connection between atypical maternal behaviours and those assessed by specific measures outlined in Chapter 2 constitutes an additional focus for future research. Further research on Global Scales' validity should therefore focus on one of the measures assessing atypical maternal behaviours, preferably the DIP coding system (Out et al., 2009), as it combines categories from the FR-coding system and the AMBIANCE. This research might find that several PIRAT Global Scales subscales may need to include more descriptors to assess the relational quality with very disturbed, conflicted or deprived parents appropriately, or that new subscales should be added in order to capture the specifics of parents with severe psychopathology. Research on high-risk samples might even need an extended scale capturing the extremely disturbing relational qualities, or might need further evaluation and amendment of PIRAT Global Scales 'severe concern' rating so that is really reserved for extremely disturbing parents.

Relational quality and parental representations

As described in more detail in Chapter 1, "the mother's observations of the moment to moment changes in the child's mental state, and her representation of these first in gesture and action, and later in words and play" (Slade, 2005, p. 271) allows the infant to experience maternal mentalizing capacities, representing "the links between affect, behavior, the body, and self-experience" (Slade, 2005, p. 271). Negative, age-inappropriate and 'distorted' parental representations are found to be indicative of relational risk (Benoit, Zeanah, Parker, Nicholson, & Coolbear, 1997; Lieberman, 1999, 2004; Lyons-Ruth & Block, 1996; Schechter et al., 2009; Zeanah et al., 1993; Zeanah, Benoit, Madigan, & Mills-Koonce, 2014). And particularly "strongly negative attributions are not responsive to the actual state or actions of the child" (Schechter et al., 2014, p. 10) and strain the emerging infant's sense of self and intimate relationships (Lieberman, 1999). And research on parental representations of the parent-infant relationship has shown significant concurrent and predictive concordance between the Working Model of the Child Interview (WMCI; Benoit, Zeanah et al., 1997) and infant attachment classifications (Benoit, Parker et al., 1997; Zeanah, Benoit, Hirshberg, Barton, & Regan, 1994).

Given the impact of negative, age-inappropriate, disengaged and 'distorted' representations which are found to be indicative of relational risk, future research should explore how Global Scales relate to measures that code parental

representations of the parent-child relationship, such as the Working Model of the Child Interview (WMCI; Benoit, Zeanah et al., 1997).

The establishment of criterion validity on various populations

Given the findings described in the previous sections, future research is also needed concerning Global Scales' validity among diverse cultural backgrounds, as well as across a range of different professional contexts, such as infant mental health provision, community health services, adult and infant psychiatry, and parent-infant psychotherapy.

Furthermore, this research will have to assess PIRAT Global Scales' reliability and validity across a variety of clinical samples, and in various populations, such as high-risk and low-risk samples, and maternal psychopathology, such as maternal depression, as well as other psychiatric disorders, trauma and neglect. Moreover, it will have to evaluate Global Scales' relevance for variations in infants' and toddlers' health, such as prematurity and psychiatric disorders, such as regulatory disorders and attachment disorders.

In addition, it would be of interest to evaluate the impact of not only the raters' cultural background, but also of their gender, attachment representations, professional background, or parent/non-parent status on the ratings. It would be quite interesting to qualitatively analyse how adult psychiatrists and paediatricians differ using PIRAT Global Scales as well as quantitatively analyse their levels of IRR, and compare whether they are higher for parent-infant vs. infant-parent relational qualities given their different focus on either parent vs. infant, parental mental health vs. infant's physical health.

Future research will have to further explore the psychometric impact of subscales which are mostly rated '0' 'no concern/not seen' on the global rating, such as infant-parent 'Responsiveness to stranger', 'Quality of contact: clinging', 'Sexualized' and parent-infant 'Intrusive' and 'Sexualized'. Furthermore, this research has to evaluate how to deal with retaining these subscales indicating risk in itself without reducing reliability and validity of PIRAT Global Scales overall. In particular, it needs to address the issue of retaining the rare but important signs of high risk, which will of course have highly-skewed distributions and reduce the coherence of overall ratings on PIRAT. A possible way forward is taking them out of the scale structure but keeping them as 'red flags', indicative of relational risk on the coding sheet.

In addition to this it will have to evaluate the non-homogeneous subscales, i-p 10 and p-i 8 'Sexualized', which correlate negatively with the other subscales. It needs to test whether a reverse scoring of the sexualized subscales makes sense, and if these two subscales will show similar results when coded on different samples, e.g. high-risk

samples where sexualized behaviours might be observed more often. From a clinical point of view a reverse scoring does not make sense, as sexualized behaviour clearly is an indicator for relational risk, with a rising level of concern (ranging from issues of relational boundaries to severe concern) and should therefore be rated similar to other PIRAT Global Scales subscales.

Future research will also have to re-examine the impact of infant-parent and parent-infant subscales as factor analysis might produce new factors that can be clinically helpful.

Age range of infants

Given the limited age range from 0 – 12 months of this sample, further research will be needed in order to evaluate PIRAT Global Scales' reliability and validity for children up to 24 months, as this is the age range (0 – 24 months) PIRAT was initially developed for.

Cultural aspects and cross-cultural validation

Future research will have to apply Global Scales' ratings to a variety of samples, as well as comparing raters from various cultural backgrounds, in order to evaluate cultural discrepancies in assessing parent-infant relational quality.

Further research will be required to evaluate the cross-cultural use of translated versions of PIRAT Global Scales to enhance the validity of the translated versions, starting with the German translation described in the previous paragraph.

This research will evaluate reliability and validity of the German version of PIRAT Global scales. Experience from teaching German-speaking parent-infant psychotherapists suggests that the development of a German translation of the reliability training, as well as a set of clips of German-speaking parents and infants at play, will necessarily be the first step to enhance the reliability and validity of the German version in order to train German healthcare professionals and to ensure their reliability.

The cross-cultural validation should focus on construct validity, as it is highly relevant to establishing the validity of constructs and assessments across populations and cultures. It would allow answering questions as: "To what extent is this measure culture-free?" "Does this assessment tool measure relational quality in diverse cultural samples?" "How does a parent-infant dyad with a high score differ from a parent-infant dyad with a low score?" The answers to these questions would be derived from quantitative research, essentially through a series of hypothesis-driven investigations aimed at identifying the theoretical framework consisting of more or less proximate identifiers for the construct, at least some of which would need to be observable

(Prince, 2013). Quantitative analyses of internal consistency, inter-item and item-total correlations, and test-retest reliability can contribute to establishing construct validity in a new cultural setting. Exploratory factor analysis can be used to compare factors and factor loadings. The hypothesis of ‘measurement invariance’ across countries and cultures can be tested explicitly using confirmatory factor analysis (common underlying factors and factor loadings) and Rasch models (common hierarchy of items) (for an overview see Prince, 2013). There are few examples in the cross-cultural mental health literature of demonstrably valid, culture-fair comparison, so the demonstration of construct validity of PIRAT Global Scales across countries, cultures, and ethnic groups would serve the purposes of comparative research.

Global quality of the relationship informed by microanalytic observation

Given that CIB ‘Reciprocity’ shows good construct validity with ‘Synchrony’ assessed by microanalytic coding (Moshe & Feldman, 2006; Harel, 2006), and assessed with the “Monadic Phases” system (Tronick, Als, & Brazelton, 1980), it would be interesting to evaluate the concurrent and discriminant construct validity with a microanalytic scale / coding system. The global level of relational quality versus microanalytic observational tools might enable the assessment of the fine-grained details of the parent–infant interaction that often occur without awareness, such as how the behaviour between parent and infant unfolds over time, and how the parent or the infant’s behaviour is influenced by the behaviour of the interaction partner (Gardner 2000; Lotzin, 2015).

Embodied relationship quality

It would be valuable to evaluate to what extent Global Scales capture embodied aspects of relational quality, such as language, symbolic thought, and defences, which are built on prototypical, preverbal (and embodied) experiences of gestures and actions with the caregiver or primary object (Emde, 2007, commentary on Fonagy & Target). It would therefore be of benefit to validate Global Scales against a measure assessing the embodied relational quality, such as PEM, as described in Chapter 2.

Mother-infant and father-infant interaction

Given the unique way fathers interact with their infant/toddler described in the beginning of this chapter, the adaption and validation of observational measures for father–infant interaction remains an imperative goal for future research, particularly to explore the domains in which father–infant interaction differs from mother–infant interaction. It would be of particular interest if PIRAT Global Scales subscales’ operationalization of infant-parent and parent-infant behaviours was able to reflect the

way fathers interact with their infants as well as they do for mothers and infants. Future research might find that specific subscales may need more descriptors to assess father-infant interactions appropriately, or that new subscales should be added in order to capture the specifics of father-infant relationships.

From dyadic to triadic interaction

In this line of research, it would be useful to see if PIRAT Global Scales can be used to assess parallel dyadic mother-infant and father-infant interactions as well as triadic interaction, e.g. to observe the father as an object of positive relational experience, offering repair and good enough fathering, if the mother were emotionally withdrawn. In this manner, Global Scales could be compared to Lausanne Triologue Play (Fivaz-Depeursinge et al., 2005). The Lausanne Triologue Play is a semi-structured situation designed to systematically observe the family at play. The father, mother and infant play in the four contexts that make up three-way interactions: three '2 + 1s', wherein two partners engage with each other while the other person remains third party, and one '3-together' where all partners are active. In an exploratory study of 12 families, Fivaz-Depeursinge and Corboz-Warnery (1999) found that 9-month-olds observed in this context engaged in triangular communication, which paralleled the dyadic communication observed at the end of the first year. Infants made triangular bids as they rapidly shifted their attention and affect between their parents or made social referencing to one parent concerning the other's behaviour. The authors also observed triangular bids in the Lausanne Triologue Play as early as 3 months. These preliminary results led them to use this procedure to study triangular bids more systematically. In order to stress the triangular abilities of infants, the procedure was modified to include a still-face during one of the '2 + 1' contexts (De Noni, 1999; Donzé, 1998). The observation of the triadic interaction of infant, mother and father, in particular the child's active role in it, has also an important impact on the psychodynamic treatment of relational disturbances (Harel, Kaplan, & Patt, 2006; Harel, Kaplan, Avimeir-Patt & Ben-Aaron, 2006).

New subscales of PIRAT Global Scales

The extension of PIRAT Global Scales regarding the assessment of relational quality of high-risk samples and father-infant-interactions as discussed in previous paragraphs will be subject to future research. From an attachment researcher's point of view PIRAT Global Scales should include another parent-infant subscale assessing the parental ability to comfort the baby (Anna Buchheim, personal communication). This seems to be an important point, as the parent's ability to comfort and soothe their baby (and co-regulate the infant's arousal) has been shown highly relevant for the

development of attachment security. This new scale would be an opposite parent-infant subscale to the infant-parent subscale 'Ability to be comforted' (i-p: 5).

Limited age range versus extended age range and age specific descriptors

Given that PIRAT Global Scales were developed for clinical use from 0 – 24 months but this research so far only confirmed its reliability and validity from 0 – 12 months. Therefore, future research should further evaluate PIRAT Global Scales clinical applicability for either a limited age range focusing on the first year of life or further develop the measure to become applicable from 0 – 36 months as most Early Intervention and Infant Mental Health Services support infants/toddlers from 0 – 3 years of age and their parents. An extended version of PIRAT Global Scales should include age specific descriptors for most infant-parent and some parent-infant subscales, in particular those indicative of relational risk. Coding criteria for these subscales, such as infant-parent 'Sexualized' behaviour, need further precision and should to be anchored within developmental phases (within 0 - 36 months) in a way that different behaviours would count at different ages as lack of anchoring could lead to poor reliability/validity, most likely inter-rater reliability.

Accessibility of PIRAT Global Scales Manual and Reliability Training

Given the fact that a recent measures review found that observational tools for measuring parent–infant interaction often lacked a user manual, and if available, manuals often did not contain information on the tool's psychometric properties (Lotzin et al., 2015), tools would benefit from the development of user manuals with clear guidelines on scoring and interpretation. PIRAT Global Scales already include guidelines on videotaping, coding and interpretation of codings, but there is clearly more information to be included on the reliability training and testing protocol, and on the newly established psychometric properties.

Furthermore, guidelines to interpret the observed quality of the parent-infant relationship should be included in order to enhance the user's awareness for clinical implications of the assessed relational quality. These guidelines should not only help the clinician using PIRAT Global Scales to answer questions, such as if a couple of '3' ratings causes more severe concern than mostly '2' ratings and a '4'. It should further relate the assessed level of concern to the clinically observed risk in order to support user's decision-making regarding the intervention needed. Moreover, these guidelines should include examples of how to use PIRAT Global Scales to develop a focus for intervention and for parent-work, to assess changes over the course of an intervention, and to evaluate outcome in the end of treatment. In addition, a new section within the manual could address the emotional reactions of PIRAT Global Scales users when

watching videotaped interactions, specifically negative, confusing, weird feelings, and strong emotional reactions inducing a feeling of fear for the baby, extreme compassion for mother or baby, or aversive feelings towards mother or baby. This section should remind coders of the relevance of their emotional reactions during coding, to take notes and think of them as important signs which will need further exploration regarding their specific meaning. The discussion of emotional reactions during coding specific qualities of parent-infant relationships (which is currently part of the training process) could be further elaborated in the manual. For example, typical reactions, such as the observation of extremely incoherent and disruptive parental behaviours often indicating a change of the representational level followed by incoherent reactions of the baby (freezing, stilling, dissociation, or hyper-arousal), and feelings of insecurity and confusion up to the temporary loss of the ability to think in reaction to Borderline parents could be addressed.

In the future, PIRAT Global Scales Manual should be available in a printed version, maybe even published by a commercial psychometric publisher, in combination with the attendance of the training course, so that participants could not only obtain critical information of the measure but also familiarize themselves with the measure before training is attended.

Finally, an online training at an affordable rate, such as the long-distance training available for the Emotional Availability Scales, could be developed in order to address the need for a clinical measure of the relational quality for health professionals with limited financial resources, and/or who are based too far away to be able to attend trainings in person. This training should be based on a variety of videotaped examples of specific relational infant-parent and parent-infant qualities covering the range of levels of concern included in PIRAT Global Scales and could provide snippets of clips for specific descriptors of relational behaviours in the manual. A future version of PIRAT Global Scales Manual could maybe even include a visual guide to specific emotional states of the infant (see Nugent, 2011) and relational qualities, as displayed in picture books on the mother-infant interaction (see Beebe, Cohen & Lachmann, 2016).

9.9. Conclusion

PIRAT Global Scales are a clinical measure to assess the global quality of the parent-infant relationship. Based on the coding of all infant-parent and parent-infant subscales, the Infant-Parent and Parent-Infant Global Rating is coded on the 5-point coding scale, such as to capture the impact of specific infant and parental behaviours linked to the global quality of the parent-infant relationship. For details see coding procedure described in Chapter 6.

This thesis has contributed to knowledge about how we might assess and understand the early parent-infant relationships in several ways:

1. It has expanded on previous research by providing a refined Coding Manual of the Parent-Infant Relational Assessment Tool (PIRAT), and as yet unreported data on PIRAT's inter-rater reliability (IRR). For details see Chapter 4.
2. It has described the development of PIRAT Global Scales, an alternative methodology for assessing the global quality of the early infant-parent and parent-infant relationship, as well as a variety of qualities and abilities specific to the dyadic infant-parent and parent-infant relationship. For details see Chapter 5.
3. It has explored the psychometric properties of this newly developed observational measure applied directly to assessments of parents' and infants' interactions and their relational quality. PIRAT Global Scales have been shown a reliable and valid measure to assess the global quality of the infant-parent and parent-infant relationship from 0 – 12 months, as well as to evaluate specific relational qualities of infant and parent and indicators of risk within the parent-infant relationship. For details see Chapter 6, 7 and 8. The findings have implications for both the clinical and the research use of PIRAT Global Scales in different contexts and for different populations.
4. It has contributed to our understanding and assessment of the impact of maternal psychopathology and trauma, adult attachment styles, the parent's capacity for mentalization and how these influence the quality of the parent-infant relationship. Moreover, Global Scales has contributed to our understanding and assessment of the baby's impact on the relational quality. This seems of particular importance as the experience from various trainings found most professional's capacities to observe the global parent-infant relational quality to be restricted by the lack of awareness of the

infant's contribution to the interaction. PIRAT Global Scales seemed to rise awareness of the subtle signs of disturbed interactions, even in interactions that do not immediately provoke anxiety in the observer but might be precursors of later social and emotional difficulties. Global Scales enable the user to codify his or her observations and set them within a validated assessment framework of the parent-infant relationship, observed within interactions between mother/father/caregiver and infant/toddler. The scales therefore provide a shared language for professional multi-disciplinary health teams undertaking risk assessments and requiring a framework for identifying infants at risk of developmental disturbances and delays. As PIRAT Global Scales' theoretical background is grounded in psychoanalytic thinking about the parent-infant relationship, it may be a suitable measure not only to assess the quality of the relationship but also to train health professionals from a variety of backgrounds to observe the subtleties of the emerging early parent-infant relationship.

Feedback from the trainings shows that PIRAT Global Scales offer a structure to systematise thinking about the qualities of the parent-infant relationship. It also provides a language to discuss the observed relational quality and to facilitate the transfer of knowledge from infancy research and psychoanalytic theory about the early relationship into a wider professional milieu and contributes to the process of formulating risk assessments and a need for intervention.

It can be used reliably by professionals from a range of professional backgrounds including parent-infant psychotherapy, infant and perinatal mental health, and infant development professionals, such as GPs, health visitors and community nurses, as well as psychiatrists and psychotherapists. It aims to identify parents and infants where the primary relationship is in difficulty when it appears in the consulting room, clinic or home environment, and can be used as a screening instrument to identify infants at risk.

5. Finally, the current research has provided data about a potentially useful, validated observational measure for clinical use. PIRAT Global Scales can be used by a variety of health professionals working with parents and infants. It can be used reliably and in a time-efficient manner in clinical work contexts based on a 3.5 day reliability training. A considerable strength of assessing interaction rather than attachment is that the results are much more available for use in therapeutic settings than in laboratory attachment assessments, such as the SSP. PIRAT Global Scales offer a global, multidimensional, clinically-informative and accessible measure of the parent-infant relationship.

6. Despite the limited age range from 0 – 12 months of the sample used for reliability and validity testing summarized previously in Chapter 9, it can also be considered that a strength of PIRAT Global Scales lies in their reliability and validity in assessing the emerging relational quality in its earliest stages. The prevailing emphasis on the importance of early intervention, and the evidence of the effectiveness of parent-infant psychotherapy in terms of improving both parental functioning and fostering secure attachment relationships in young children (Barlow et al., 2013; Granqvist et al., 2017), support the clinical need to detect very early risks and measure treatment outcomes, and efficacy, for parents and young babies (Sleed, 2013). The earliest possible identification of difficulties within parent-infant relationships, ideally within the first nine months (Feldman, 2016), in order to prevent the development of psychopathology, created an increased understanding of the importance of very early intervention and generated a demand for assessment measures that can be specifically applied to this vulnerable developmental phase. PIRAT Global Scales, designed for clinical use by professionals from a variety of professional backgrounds, offer a potentially valuable tool in this context.

Appendices

Appendix 1

Measures

Emotional Availability Scales (EAS; Biringen, Robinson, & Emde, 2000)

Coding Sheet

Emotional Availability Scales

Part I: Infancy to early childhood

Video ID: _____ Date: _____ Coder: _____

| | Score given | Actual score | Comments |
|--------------------------------|-------------|--------------|----------|
| Sensitivity | | | |
| Parental Structuring | | | |
| Parental Non Intrusiveness | | | |
| Parental Non Hostility | | | |
| Child Responsiveness to Parent | | | |
| Child Involvement with Parent | | | |

Coding Interactive Behavior (CIB; Feldman, 1998)

Coding Sheet

CIB Coding Sheet reformatted for internal use in AFC by Intern B.K. 09/07

Subject ID _____ Baby's Age _____ Date _____ Coder's Name _____

| Parent Codes | Child Codes |
|--|--|
| 1. Forcing | 23. Gaze (2-6m)/ Joint Attention |
| 2. Overriding-Intrusiveness | 24. Positive Affect |
| 3. Acknowledging | 25. Negative Emotionality/Fussy |
| 4. Imitating (till 12m.) | 26. Withdrawal |
| 5. Elaborating | 27. Emotional Lability (from 9m.) |
| 6. Parent Gaze / Joint Attention | 28. Child Affection to Parent (from 9m.) |
| 7. Positive Affect | 29. Alert |
| 8. Depressed Mood | 30. Fatigue |
| 9. Negative Affect / Anger | 31. Vocaliz. (2-12m.) / Verb. Output |
| 10. Hostility | 32. Initiation |
| 11. Vocal Appropriateness, Clarity | 33. Compliance to Parent (from 12 m.) |
| 12. Anxiety | 34. Reliance on Parent for Help (from 12 m.) |
| 13. Appropriate Range of Affect | 35. On-Task Persistence (from 12 m.) |
| 14. Consistency of Style | 36. Avoidance of Parent (from 12 m.) |
| 15. Resourcefulness | 37. Competent Use of Environment (from 9m.) |
| 16. On-Task Persistence (from 9m.) | 38. Creative-Symbolic Play (from 12 m.) |
| 17. Appr. Structure / Limit-Setting (from 9m.) | Dyadic Codes |
| 18. Praising (from 9m.) | 39. Dyadic Reciprocity |
| 19. Criticizing (from 9m.) | 40. Adaptation-Regulation |
| 20. Affectionate Touch | 41. Fluency |
| 21. Enthusiasm | 42. Constriction |
| 22. Supportive Presence | 43. Tension |
| Comments: | Lead-Lag Relationship |
| | Child-Led Interaction |
| | Parent-Led Interaction |

Baby till 9 months: 32 basics + 1 = 33 questions

Baby between 9 and 12 months: 32 basics + 7 = 39 questions

Baby between 12 and 23 months: 32 basics + 12 = 44 questions

Inter-Rater-Reliability: ____ questions right of ____ → ____ %

Compared with _____ (name of person)

Child Adult Relationship Index (CARE-Index; Crittenden, 2001)

Sensitivity Scale

15

Sensitivity Scale

Sensitive (14-9)

14-13 Mutual delight, joy in one another; a dance.

12-11 Smooth, pleasing interaction; playful, shared positive affect.

10-9 Quite satisfactory play; no problems, but no dance.

Some misattunement or inconsistencies

8-7 Adequate play, but noticeable periods of dissynchrony (either controlling or unresponsive.)

Substantial misattunement but in a playful context

6-5 Clear, unresolved problems; limited playfulness, but no evidence of hostility or lack of empathy (unresponsiveness).

Sufficient misattunement so that play is not possible at all

4-3 Clear lack of empathy, nevertheless, some feeble (insufficient or unsuccessful) attempt is made to respond to infant; lack of playful quality.

2-0 Total failure to perceive or attempt to sooth infant's distressed state; no play.

Parenting Stress Index

(Abidin, 1990)

Questionnaire

PARENTING STRESS INDEX: SHORT FORM (PSI:SF; ABIDIN, 1990)

PARENTING STRESS INDEX: SF

| | SA = Strongly Agree | A = Agree | NS = Not Sure | D = Disagree | SD = Strongly Disagree |
|---|---------------------|-----------|---------------|--------------|------------------------|
| 1. I often have the feeling that I cannot handle things very well. | SA | A | NS | D | SD |
| 2. I find myself giving up more of my life to meet my children's needs than I ever expected. | SA | A | NS | D | SD |
| 3. I feel trapped by my responsibilities as a parent. | SA | A | NS | D | SD |
| 4. Since having this child, I have been unable to do new and different things. | SA | A | NS | D | SD |
| 5. Since having a child, I feel that I am almost never able to do things that I like to do. | SA | A | NS | D | SD |
| 6. I am unhappy with the last purchase of clothing I made for myself. | SA | A | NS | D | SD |
| 7. There are quite a few things that bother me about my life. | SA | A | NS | D | SD |
| 8. Having a child has caused more problems than I expected in my relationship with my spouse (or male/female friend). | SA | A | NS | D | SD |
| 9. I feel alone and without friends. | SA | A | NS | D | SD |
| 10. When I go to a party, I usually expect not to enjoy myself. | SA | A | NS | D | SD |
| 11. I am not as interested in people as I used to be. | SA | A | NS | D | SD |
| 12. I don't enjoy things as I used to. | SA | A | NS | D | SD |
| 13. My child rarely does things for me that make me feel good. | SA | A | NS | D | SD |
| 14. Sometimes I feel my child doesn't like me and doesn't want to be close to me. | SA | A | NS | D | SD |
| 15. My child smiles at me much less than I expected. | SA | A | NS | D | SD |
| 16. When I do things for my child, I get the feeling that my efforts are not appreciated very much. | SA | A | NS | D | SD |
| 17. When playing, my child doesn't often giggle or laugh. | SA | A | NS | D | SD |
| 18. My child doesn't seem to learn as quickly as most children. | SA | A | NS | D | SD |
| 19. My child doesn't seem to smile as much as most children. | SA | A | NS | D | SD |
| 20. My child is not able to do as much as I expected. | SA | A | NS | D | SD |
| 21. It takes a long time and it is very hard for my child to get used to new things. | SA | A | NS | D | SD |
| For the next statement, choose your response from the choices "1" to "5" below. | | | | | |
| 22. I feel that I am: | 1 | 2 | 3 | 4 | 5 |
| 1. not very good at being a parent | | | | | |
| 2. a person who has some trouble being a parent | | | | | |
| 3. an average parent | | | | | |
| 4. a better than average parent | | | | | |
| 5. a very good parent | | | | | |
| 23. I expected to have closer and warmer feelings for my child than I do and this bothers me. | SA | A | NS | D | SD |
| 24. Sometimes my child does things that bother me just to be mean. | SA | A | NS | D | SD |
| 25. My child seems to cry or fuss more often than most children. | SA | A | NS | D | SD |
| 26. My child generally wakes up in a bad mood. | SA | A | NS | D | SD |
| 27. I feel that my child is very moody and easily upset. | SA | A | NS | D | SD |
| 28. My child does a few things which bother me a great deal. | SA | A | NS | D | SD |
| 29. My child reacts very strongly when something happens that my child doesn't like. | SA | A | NS | D | SD |
| 30. My child gets upset easily over the smallest thing. | SA | A | NS | D | SD |
| 31. My child's sleeping or eating schedule was much harder to establish than I expected. | SA | A | NS | D | SD |
| For the next statement, choose your response from the choices "1" to "5" below. | | | | | |
| 32. I have found that getting my child to do something or stop doing something is: | 1 | 2 | 3 | 4 | 5 |
| 1. much harder than I expected | | | | | |
| 2. somewhat harder than I expected | | | | | |
| 3. about as hard as I expected | | | | | |
| 4. somewhat easier than I expected | | | | | |
| 5. much easier than I expected | | | | | |
| For the next statement, choose your response from the choices "10+" to "1-3." | | | | | |
| 33. Think carefully and count the number of things which your child does that bother you. For example: dawdles, refuses to listen, overactive, cries, interrupts, fights, whines, etc. | 10+ | 8-9 | 6-7 | 4-5 | 1-3 |
| 34. There are some things my child does that really bother me a lot. | SA | A | NS | D | SD |
| 35. My child turned out to be more of a problem than I had expected. | SA | A | NS | D | SD |
| 36. My child makes more demands on me than most children. | SA | A | NS | D | SD |

Parent Development Interview

PDI Reflective Functioning (Slade et al., 2004)

Coding Sheet

PDI RF CODING SHEET (SLADE ET AL., 2004)

RF Coding Sheet for PDI-R

Subject ID#: _____ Rater: _____

Overall Score: _____ Date: _____

| | PAGE | LINE | TYPE | RF | NOTES |
|--------------------------|------|------|------|----|-------|
| Clicked | | | | | |
| Not clicked | | | | | |
| Rela. aff. Personality | | | | | |
| Joy | | | | | |
| Pain or difficulty | | | | | |
| Having c changed you | | | | | |
| Needy | | | | | |
| Angry | | | | | |
| Guilty | | | | | |
| C upset | | | | | |
| Rejected | | | | | |
| Parents | | | | | |
| C's feelings about sep'n | | | | | |
| M's feelings about sep'n | | | | | |
| Losing | | | | | |

Appendix 2

Clinical Assessment Form Manual (CAF)

Parent-Infant Project, 2002

**Parent-Infant Project
Clinical Assessment Manual
Version 1.1.4**

In this manual

- pronouns 'he', 'his', 'him' and 'himself' are used for infant,
- pronouns 'she', 'her' and 'herself' are used for therapist, and
- pronouns 'he / she', 'his / her', 'him / her' and 'him / herself' are used for parent.

This manual is to be used by psychotherapists for clinical assessment.

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Miyabi Watanabe

30/1/2002

● Infant-Parent Interaction

| Areas of Therapeutic Concern | 0: no concern | 1: some concern | 2: significant concern |
|--|--|--|---|
| Infant's seeking of contact | <ul style="list-style-type: none"> ● Infant actively looks for varied and affectively appropriate contact with his parent. ● Infant can go physically back and forth between his parent and play / room / therapist. | <ul style="list-style-type: none"> ● Infant does not refer to parent where contact would be expected. | <ul style="list-style-type: none"> ● Infant does not initiate / make contact. ● Infant can not separate from parent. ● Infant seeks contact only around negative emotions. ● Infant does not use parent to regulate affect. |
| Responsiveness to contact with mother/father | <ul style="list-style-type: none"> ● Infant uses contact with mother/father to regulate affect and behaviour. | <ul style="list-style-type: none"> ● Infant is inhibited / delayed, but it gets established in the end. ● Frequent mismatch leaves infant negative affect. Repair takes place, but with delay. | <ul style="list-style-type: none"> ● Infant is frozen / stiffened / frightened / withdrawn in response to contact. ● Infant does not use mother/father to regulate affect and resorts to self-regulation. ● Infant overrelies on therapist or falls apart. |
| Responsiveness to therapist | <ul style="list-style-type: none"> ● Infant may not have a lot to do with therapist. ● Infant shows a balance between caution and curiosity, while parent remains the preferred person for safety and comfort. | <ul style="list-style-type: none"> ● Infant does not show stranger anxiety at all. ● Infant is overinterested in therapist or shows caution, but parent can mediate. | <ul style="list-style-type: none"> ● Infant is very avoidant. ● Infant does not use parent as a mediator. |
| Ability to communicate needs | <ul style="list-style-type: none"> ● Infant can refer to parent when he wants e.g. to play / to talk / to be cuddled. | <ul style="list-style-type: none"> ● Infant tries to communicate, but often gives up. ● Infant shows more or less self-sufficiency than he is expected at age. | <ul style="list-style-type: none"> ● Infant expresses his distress by self-harming. ● Infant immediately overwhelmed by anything and cries too much. ● Infant appears not to register his own needs and can not express his feelings. |
| Ability to be comforted | <ul style="list-style-type: none"> ● Infant allows parent to address his distress and the level of distress is reduced quite quickly in response to the parent actions. | <ul style="list-style-type: none"> ● Infant seeks comfort, but turns away dissatisfied. ● Infant has difficulties / takes times in responding to parent and the distress is not easily alleviated. | <ul style="list-style-type: none"> ● Infant is unable to use parent's actions to relieve distress and there is an escalation or inhibition of distress. ● Infant habitually resorts to self-comfort. |

| Areas of Therapeutic Concern | 0: no concern | 1: some concern | 2: significant concern |
|--|---|---|--|
| Quality of contact: aggressive / attacking | <ul style="list-style-type: none"> ● Infant can use aggression for mastery and exploration. ● Infant shows anger or aggression in the context of the interactions / contents of the session. | <ul style="list-style-type: none"> ● Infant's anger is overwhelming for him at times. ● Infant can not find a way of conveying his anger. | <ul style="list-style-type: none"> ● There is predominance of aggression over other modes of behaviour. ● The aggression has acquired a destructive / sadistic quality. ● Infant is extremely passive. |
| Quality of contact: clinging | <ul style="list-style-type: none"> ● Infant can move away from parent. ● Infant's clinging is linked to the situation and can shift. ● Infant can let parent move away, to something unrelated to him. | <ul style="list-style-type: none"> ● Clinging behaviour takes a long time to shift. ● Infant can sometimes move away from parent, but allows parent only to move away on his terms. | <ul style="list-style-type: none"> ● Infant can not move away from parent or let parent move away from him. |
| Quality of contact: frightened / wary | <ul style="list-style-type: none"> ● Infant shows fear / anxiety / caution that is alleviated by parent in relation to an external event. | <ul style="list-style-type: none"> ● Infant intermittently presents behaviours suggesting fear, e.g. rigid body tone, overcompliance, and therapist needs further evidence. | <ul style="list-style-type: none"> ● Infant shows through feelings / behaviour experiences of being frightened. e.g. freezing, overcompliance, panic, which is induced by parent. |
| Quality of contact: lack of pleasure | <ul style="list-style-type: none"> ● Infant expresses an expectation of a pleasurable exchange through body tone / action / sound / play with parent. | <ul style="list-style-type: none"> ● Infant can respond to pleasurable interactions initiated by parent, but often remains dull / restricted in affect. | <ul style="list-style-type: none"> ● Infant does not display pleasure, e.g. smiling / noises, even when parent initiates interactions. ● External manifestations of pleasure appear false; e.g. smiling out of context. |
| Quality of contact: sexualised | <ul style="list-style-type: none"> ● Infant shows pleasure in bodily interactions with parent ● There is no anxiety or overstimulation. | <ul style="list-style-type: none"> ● Body boundaries between infant and parent in terms of soothing and stimulation appear confused. | <ul style="list-style-type: none"> ● Infant's and / or parent's body is / are involved in stimulation and excitement of the other |
| Quality of contact: Dissociative | <ul style="list-style-type: none"> ● Infant can soothe himself and play in the presence of parent. ● In a potentially traumatic situation, infant either turns to parent or finds a strategy for soothing. | | <ul style="list-style-type: none"> ● Infant shows pervasive pattern of disconnecting from parent. ● Infant displays extreme physical / emotional withdrawal from parent into states of self-stilling. This may be a fleeting or a pervasive pattern. |
| Quality of contact: Avoidant | <ul style="list-style-type: none"> ● Infant seeks parent and uses him / her for play, exploration and regulation. | <ul style="list-style-type: none"> ● Infant appears to need contact with parent, but maintains a distance. | <ul style="list-style-type: none"> ● Infant consistently excludes parent, from his focus of attention showing a preference for other adults or objects, e.g. toys. |

● Parent-Infant Interaction

| Areas of Therapeutic Concern | 0: no concern | 1: some concern | 2: significant concern |
|--|---|--|---|
| Parent's initiation of physical contact | <ul style="list-style-type: none"> ● Parent initiates / allows body contact with ease and pleasure, e.g. being touched / being playful with infant's body. | <ul style="list-style-type: none"> ● There is some inflexibility in parent's physical contact. ● Parent quite often uses physical contact for her own sake. | <ul style="list-style-type: none"> ● Parent rigidly prohibits physical contact or is intrusive in a physical contact. ● Parent shows that infant's bodily needs is distasteful. ● Parent makes contact in a dangerous / threatening manner. ● Parent omits to keep infant physically safe. |
| Parent's emotional contact | <ul style="list-style-type: none"> ● Parent tries to understand his / her own and/or infant's affective experience. ● Parent is emotionally flexible and is able to follow his / her own infant's emotional change. ● Parent can initiate and maintain contact with infant in the face of his / her own preoccupation, or can catch their preoccupation before infant becomes very distressed. | <ul style="list-style-type: none"> ● Parent sometimes does not use emotional language, verbal / non-verbal, in relation to self and/or infant. ● Parent loses track of infant in the face of their preoccupation, even when infant becomes distressed. | <ul style="list-style-type: none"> ● Parent's emotional language pervasively mismatches therapist's understanding of his / her own and/or infant's experience. ● Parent uses infant for his / her own emotional needs at the expense of the infant's own experience of himself. ● Parent emotionally overwhelms infant / is very detached emotionally from infant. |
| Parent's playfulness in relation to infant | <ul style="list-style-type: none"> ● Parent can play with infant / can enjoy infant's playfulness. | <ul style="list-style-type: none"> ● Parent finds it difficult to follow infant's lead in play. ● Parent's own feelings define his/her perception of infant's playfulness. ● Parent does not convey pleasure in play. | <ul style="list-style-type: none"> ● Parent does not play with infant. ● Parent repetitively intrudes upon infant's play to the exclusion of infant. ● Parent persistently defines infant's play negatively. |
| Pleasure in parenting | <ul style="list-style-type: none"> ● Parent spontaneously conveys pleasure in his/her infant and in his/her role and can also recognise difficulties about parenting. ● The infant is experienced as a source of well-being to parent | <ul style="list-style-type: none"> ● Parent speaks of pleasure but does not convey in action or emotion. ● Parent conveys a chronic struggle in maintaining a sense of pleasure in his/her infant. | <ul style="list-style-type: none"> ● Parent never experiences pleasure in relation to his/her infant or role. ● Infant is not experienced as a source of well-being to parent. |

| Areas of Therapeutic Concern | 0: no concern | 1: some concern | 2: significant concern |
|--|--|---|---|
| Hostility and blame | <ul style="list-style-type: none"> Parent can bear hostile feelings towards his/her infant without overwhelming guilt or enactment. | <ul style="list-style-type: none"> Parent's hostility is sometimes expressed in an unmodulated way in interaction. Parent resists / defend against recognising / experiencing his/her own anger towards his/her infant. | <ul style="list-style-type: none"> Parent attributes malevolent intent to the baby. Parent experiences his/her infant as the cause of his/her distress. Hostility in parent is denied, but is expressed in the response of infant. |
| Quality of contact: intrusive / controlling | <ul style="list-style-type: none"> Parent is able to let infant take control of what he is doing, while maintaining safe boundaries. | <ul style="list-style-type: none"> Parent repetitively interferes with infant's exploration and play. | <ul style="list-style-type: none"> Parent interferes pervasively with infant's exploration and play. Parent is intrusive in terms of body functions. |
| Quality of contact: frightening | <ul style="list-style-type: none"> Parent's affect and/or behaviour is transiently frightening for reasons of discipline or safety, and parent is then able to restore positive interactions. | <ul style="list-style-type: none"> Parent presents threatening behaviour that is not underpinned by intent to harm infant. | <ul style="list-style-type: none"> Parent's emotions are labile and unpredictable. Parent's feelings / behaviour towards infant are threatening with harmful intent. Parent does not protect infant from danger to infant. |
| Quality of contact: sexualised | <ul style="list-style-type: none"> Parent shows pleasure in bodily interactions with infant. | | <ul style="list-style-type: none"> Parent's and / or infant's body is / are involved in stimulation and excitement of the other. |
| Quality of contact: Dissociative | <ul style="list-style-type: none"> In a highly stress, parent maintains awareness of others and the environment. | | <ul style="list-style-type: none"> Parent enters a state in which he / she is cut off from all others, infant and therapist. |
| Quality of contact: Avoidant | <ul style="list-style-type: none"> Parent responds to infant's seeking play, exploration and comfort. | <ul style="list-style-type: none"> Parent often dismisses infant's attempts to get close. | <ul style="list-style-type: none"> Parent's behaviour precludes infant's attempts to get close. |
| Quality of contact: Consistency / predictability | <ul style="list-style-type: none"> Parent is clear in setting limits and parent's behaviour accurately reflects feelings appropriate to the situation. Parent's emotional communications and behaviours to infant can be anticipated in the context of the interaction | <ul style="list-style-type: none"> Outbursts of unexpected strong emotion is followed by some ability to help infant afterwards – perhaps with some recognition of effect on infant Parent accepts one type of behaviour one moment and forbids or becomes upset about it the next. | <ul style="list-style-type: none"> Parent moves from expressing one emotional state of mind to another abruptly without appreciation of impact on infant. Parent seems to provoke behaviour that he / she condemns. |

Memo:

Appendix 3

PIRAT Coding Manual – Version 1.0

Broughton & the Parent-Infant Project, 2003

PIRAT Coding Sheet

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Parent-infant Relational Assessment Form

Coded

Date _____

Child's Name _____

Child's D.O.B. _____

Mother's Name _____

| Infant-Parent Interaction | |
|--|---------------|
| | Infant-Mother |
| Infant's seeking of contact | |
| Responsiveness to contact | |
| Responsiveness to stranger | |
| Ability to communicate needs | |
| Ability to be comforted | |
| Quality of contact: Aggressive/attacking | |
| Clinging | |
| Frightened/wary | |
| Lack of pleasure | |
| Sexualised | |
| Dissociative | |
| Avoidant | |
| Parent-Infant Interaction | |
| | Mother-Infant |
| Parent's initiation of physical contact | |
| Parent's initiation of emotional contact | |
| Parent's playfulness in relation to infant | |
| Pleasure in parenting | |
| Hostility and blame | |
| Quality of contact: Intrusive/controlling | |
| Frightening | |
| Sexualised | |
| Dissociative | |
| Avoidant | |
| Consistency/predictability | |

0* - Not seen 0 - No Concern 1 - Some Concern 2 - Significant Concern

PIP-Coding form 1 for therapy-version 2 for CB-COPYRIGHT.xls

PIRAT Coding Manual – Version 1.0

Broughton & the Parent-Infant Project, 2003

Caring for young minds

Anna Freud  **Centre**

Infant-parent interaction

Infant's seeking of contact

0: no concern

Infant actively looks for contact with parent either through eye gaze, vocalization or physical proximity, depending on infant's age. For example, in the early weeks and months through an attentive gaze and facial expressions; at nine to twelve months through social referencing; seeking physical proximity; later, requesting parent's attention by calling out or drawing her/his attention to something, sharing something with parent.

A mobile infant can go physically back and forth between parent, other people and objects, toys and so forth in the room. The infant uses parent as a secure base and as a source of comfort.

1: some concern

Infant seems slow to refer to parent where contact would be expected. Infant seems more self-sufficient than would be expected e.g. too quiet, undemanding baby or mobile infant who rarely returned to touch base, share or look for comfort when hurt or distressed.

Infant's mode of making contact is sometimes upsetting e.g. screaming, throwing things, constantly pulling at parent to get her attention.

2: significant concern

Infant does not initiate or make contact with parent.

Infant is cut off from other people.

Infant seeks contact only around negative emotions e.g. constantly screaming, throwing tantrums, hurting self or others.

Infant cannot separate from parent. Infant clings to parent. Infant is unable to explore the environment.

Infant does not use parent to regulate affect

Responsiveness to contact with parent

0: no concern

Infant uses contact with parent to regulate affect and behaviour. The infant maintains homeostasis in the early weeks and subsequently contact with the parent modulates too high levels of excitation or too extended periods of low arousal.

Parent and infant are attuned i.e. there is evidence of a psychobiological 'dance' between them whereby each responds to the other's cues. This is evidenced largely through eye contact and gaze, particularly in the early months, but is also evident in vocalizations and touch. The infant's face lights up when the parent smiles and over the course of the early months there is a growing capacity to tolerate heightened states of arousal. After nine months, there is also a marked negative response to prohibitions. Such negative or shame responses are normal as long as the infant regains equilibrium reasonably quickly.

It is important to note that failures of attunement are to be expected. Healthy infants can respond to parent's initiatives to make good the rupture and can persist in trying to regain contact with parent; for example, in seeking out eye contact if parent has turned away too quickly or by breaking off eye gaze if parent persists too long and arousal levels become too high.

Infant has a range of affective responses at his disposal.

1: some concern

Infant's response to parent is inhibited or delayed but finally infant is engaged or comforted.

Frequent mismatch leaves infant distressed. Repair takes place but with delay.

Infant has to work hard to gain parent's attention. Infant is overly smiling, lively or compliant. Infant fusses, vocalizes irritably in response to parent's contact. Infant appears dull and inattentive to parent's contact. Infant avoids eye contact with parent, or monitors parent indirectly.

2: significant concern

Infant is frozen, stiffened, frightened or withdrawn in response to contact with parent.

Infant does not use parent to regulate affect and resorts to self-regulation. For example, excessive hand and limb flapping in early months; restricted affect or reversal of affect as modes of defence, e.g. smiling when being teased and frustrated

Responsiveness to stranger

0: no concern

Infant shows a balance between caution and curiosity, while parent remains the preferred person for safety and comfort.

Infant may not have a lot to do with the stranger at first, especially if age-appropriate stranger anxiety is paramount.

1: some concern

Infant does not show stranger anxiety at all.

Infant is overinterested in stranger or continues to be cautious, but parent can mediate.

2: significant concern

Infant appears very avoidant, apparently ignoring the stranger. Conversely, infant relies on stranger for comfort or protection while seemingly ignoring the parent. Infant overrelies on stranger (new adult) to negotiate difficulties and to offer comfort and support, and appears to be more interested in stranger than parent.

Infant appears to have no sense of boundaries with a stranger.

Infant does not use parent as mediator.

Ability to communicate needs

0: no concern

Infant can refer to parent when she/he wants e.g. to play, to talk, to be cuddled.

1: some concern

Infant tries to communicate but often gives up.

Infant shows more or less self-sufficiency than would be expected for her/his age. For example, infant does not cry or communicate distress if hurt or frightened.

2: significant concern

Infant's inability to communicate needs leaves her/him overwhelmed; crying inconsolably or clinging ineffectually, appearing constantly on the point of emotional disintegration.

Infant expresses distress by self-harming, e.g. constantly falling or knocking her/himself; head banging, vomiting, food refusal.

Infant expresses distress by acting out, hurting others, aggressive behaviour directed towards people and things.

Infant appears not to register her/his own needs and cannot express feelings.

Ability to be comforted

0: no concern

Infant allows parent to address her/his distress and the level of distress is reduced quite quickly in response to the parent's actions. In the early weeks, the infant latches easily on to the breast or responds to rocking and soothing. Later, the infant can respond to parent's expressions of empathy and verbalizations.

1: some concern

Infant seeks comfort but turns away dissatisfied. Infant seems to be mollified rather than satisfied and the distress appears to remain awaiting an early opportunity to resurface.

Infant has difficulty/takes time responding to parent and the distress is not easily alleviated.

Infant initially pushes parent away or lashes out but with persistence can be pacified.

2: significant concern

Infant is unable to use parent's actions to relieve distress and there is an escalation or inhibition of distress. Infant arches repeatedly away from parent's grasp, lashes out or knocks away parent's hand. Infant cannot be soothed and remains overwhelmed with distress. Alternatively, infant withdraws by either physically moving away or becoming dull and glazed in expression. Infant may become limp and huddled into a heap.

Infant habitually resorts to self-comfort. Infant may suck thumb, or rub or suck other parts of the body, clothing or other objects as her/his main source of comfort. Occasional behaviours of this nature would not be classified as of significant concern, only continual use of such forms of self-regulation in the absence of interpersonal regulatory transactions.

Quality of contact: aggressive/attacking

0: no concern

Infant can use aggression for mastery and exploration.

Infant can modulate aggression towards parent. Infant may express feelings through play or, later, verbally.

Anger or aggression may be expressed appropriately in the context of the interactions/contents of the session. For example, infant may express anger or annoyance towards parent for ignoring or misinterpreting infant's communication but infant is quickly amenable to efforts at repair.

1: some concern

Infant's anger is overwhelming for him/her at times. Infant hits, bites, kicks, screams. Infant is slow to respond to parental mediation.

Infant cannot find a way of conveying anger. Infant appears to stifle anger or to be inhibited in his behaviours. Infant intermittently grimaces or frowns at parent but avoids eye contact; and approaches to parent are oblique or curtailed as infant veers away.

2: significant concern

There is a predominance of aggression over other modes of behaviour. The infant kicks, hits, bites, spits, throws toys or other objects at parent, other adult, or directs aggressive acts towards her/himself.

The aggression has acquired a sadistic/destructive quality.

Infant is extremely passive. There is a severe restriction or reversal of affect.

Quality of contact: clinging

0: no concern

Infant can move away from parent. Infant can let parent move away to something unrelated to her/him.

Infant's clinging is linked to the situation and can shift. A toddler may cling more than a younger infant but moves away given time and can then go and return for refuelling.

1: some concern

Clinging behaviour takes a long time to shift.

Infant can sometimes move away from parent, but allows parent only to move away on his or her own terms.

2: severe concern

Infant cannot move away from parent or let parent move away from him. Infant cannot let parent look away, talk to anyone else or attend to anything else without calling parent's attention back to him/herself.

Quality of contact: frightened/wary

0: no concern

Infant shows fear/anxiety/caution that is alleviated by parent in relation to an external event.

1: some concern

Infant intermittently presents behaviours suggesting fear, e.g. rigid body tone, overcompliance, withdrawal. Infant avoids eye contact but appears wary if eye contact is made. Further evidence is required.

2: significant concern

Infant shows through feelings/behaviour experiences of being frightened e.g. stilling, freezing, overcompliance, panic, which is induced by parent.

Quality of contact: lack of pleasure

0: no concern

Infant expresses an expectation of a pleasurable exchange through body tone/action/sound/play with parent. Infant of six weeks or more smiles in response to parent. Once greeted, infant of two months and older responds with smiles, face lights up, shows pleasure in engagement.

1: some concern

Infant appears to respond to pleasurable interactions initiated by parent, but often remains dull/restricted in affect. For example, infant looks away from parent with blank expression; infant appears to attend to parent but shifts gaze out of parent's line of vision.

2: significant concern

Infant does not display pleasure, e.g. smiling, cooing, gurgling, vocalising, even when parent initiates interactions. Infant appears bored and inattentive, eyes fixed and unblinking or downcast and glazed.

External manifestations of pleasure appear false, e.g. smiling out of context or suddenly exhibiting bright, excited expression before resuming stiff, closed off demeanour.

Quality of contact: sexualized

0: no concern

Infant shows pleasure in bodily interaction with parent. There is no anxiety or overstimulation.

1: some concern

Body boundaries between infant and parent in terms of soothing appear confused. Infant touches/ fondles parent's body without restriction.

2: significant concern

Infant's and/or parent's body is/are involved in stimulation and excitement of the other. For example, infant repeatedly caresses parent's face or body, including intimate parts, without inhibition. Infant relates in a seductive way with adults, e.g. touching, kissing, overly close

physical contact. Infant appears overstimulated or overexcited. There is overt sexual presentation by infant.

Quality of contact: dissociative

0: no concern

Infant can soothe him/herself in the presence of the parent. In a potentially traumatic situation, infant either turns to parent or finds a strategy for soothing.

1: some concern

Not applicable

2: significant concern

Infant shows pervasive pattern of disconnecting from parent. Infant displays extreme physical/emotional withdrawal from parent into states of self-stilling. This may be a fleeting or pervasive pattern. Infant may become excessively still, stare into space with a dazed expression, cut off from self, parent and environment.

Quality of contact: avoidant

0: no concern

Infant seeks parent and uses him/her for play, exploration and regulation. Infant maintains optimal distance from parent for exploration and safety. Infant returns to parent for reassurance from time to time. Infant can negotiate duration and intensity of interaction with parent.

1: some concern

Infant appears to need contact with parent, but maintains a distance. Infant may approach parent when feeling content but does not signal distress directly to the parent or seek bodily contact.

2: significant concern

Infant consistently appears to exclude parent from his/her focus of attention, showing a preference for other adults or objects, e.g. toys. Infant may nevertheless exhibit tension or anxiety and close observation suggests that despite appearances infant is monitoring parent's presence at a distance.

Parent-infant interaction

Parent's initiation of physical contact

0: no concern

Parent initiates/allows body contact with ease and pleasure, e.g. being touched/being playful with infant's body.

Parent holds infant tenderly, facing towards her or positioned so that infant can reach toys or make visual contact with her. Parent caresses or cuddles infant where infant appears emotionally depleted or in low spirits. Parent and infant mould easily into embrace.

1: some concern

There is some inflexibility in parent's physical contact. Parent holds infant awkwardly, away from adult's body or in a position that precludes visual contact. Parent is slow to make physical contact even when appropriate.

Parent quite often uses physical contact for her/his own sake. For example, parent pulls infant to her/him when distressed without regard to infant's needs.

2: significant concern

Parent rigidly prohibits physical contact, pushing infant away or disengaging in a way that suggests physical proximity is undesirable. Parent indicates that infant's bodily needs are distasteful.

Parent is intensely physically intrusive. Parent consistently positions her/himself too close to infant or brings face too near to infant's face. Parent's face looms into infant's line of vision. Parent catches hold of infant without warning in a frightening or aggressive manner. Parent pokes, grabs, pulls or otherwise manipulates infant against infant's will or without reference to infant's affect, e.g. aggressive 'tickling' which continues despite infant's resistance. Parent throws toys or other objects at or onto infant or snatches objects from infant. Parent handles infant as if an inanimate object.

Parent physically threatens infant, smacks, slaps, hits or hurts in any way.

Parent fails to keep infant physically safe; does not intervene in a timely fashion where there is potential danger or is not sufficiently physically present.

Parent's initiation of emotional contact

0: no concern

Parent tries to understand his/her own and/or infant's affective experience.

Parent is emotionally flexible and is able to follow his/her own infant's emotional cues. Parent soothes infant when distressed, shares in infant's joy and pleasure.

Parent can initiate and maintain contact with infant in the face of his/her own preoccupation, or can catch their preoccupation before infant becomes very distressed.

1: some concern

Parent sometimes does not use emotional language, whether verbal or nonverbal, in relation to self and/or infant.

Parent mismatches infant's affect at times, jollying infant along rather than picking up on the affect and modulating it, or continuing to play or tease after infant has withdrawn.

Parent loses track of infant in the face of their preoccupation, even when infant becomes distressed.

2: significant concern

Parent's emotional language pervasively mismatches infant's experience. Parent laughs in response to infant's cries. Parent consistently belittles infant's distress or refuses to acknowledge negative feelings.

Parent emotionally overwhelms infant; for example, ignores infant's cues and continues to escalate excitement after infant has signaled wish to stop.

Parent is very detached emotionally from infant; leaves infant without appropriate stimulation, ignores cues to be picked up, does not respond to cries or vocalizations, lacks affective warmth and responsivity.

Parent uses infant for own emotional needs at the expense of the infant's own experience of her/himself.

Parent's playfulness in relation to infant

0: no concern

Parent plays with infant and enjoys infant's playfulness. Parent actively engages with infant either through games such as singing, 'conversation,' verbal or non-verbal turn-taking, or joint attention to toys or other aspects of the environment.

1: some concern

Parent finds it difficult to follow the infant's lead in play. Parent's own feelings define perception of infant's playfulness, for example, parent construes as naughtiness infant's pleasure in exploration. Parent does not convey pleasure in play. Parent finds infant's play worrying or troublesome and would prefer infant to sit still or keep quiet.

Parent uses toy to disengage from infant e.g. "you play with it on your own".

Parent initiates or responds to play intrusively without necessarily following infant's lead or leaving sufficient space for infant's creativity.

2: significant concern

Parent does not play with infant where play might be expected.

Parent repetitively intrudes upon infant's play to the exclusion of infant. Parent takes over the play as if parent's need is greater than infant's. Parent appears to join in play but in such a way that infant is thwarted.

Parent persistently defines infant's play negatively; for example, parent perceives infant as hostile or deliberately destructive when playing.

Parent prohibits infant's play; removing toys, denying infant access to play materials on the pretext that they are dirty or dangerous.

Pleasure in parenting

0: no concern

Parent spontaneously conveys pleasure in infant and in parenting role but can also recognize difficulties inherent in parenting. The infant is experienced as a source of well-being to the parent.

1: some concern

Parent speaks of pleasure but does not convey pleasure in action or affect. Parent conveys a chronic struggle in maintaining a sense of pleasure in infant.

Parent sees infant as a burden, tying her to the house, preventing her from pursuing her interests, career or social life.

Parent is overinvested in infant, committed to parenting role to the exclusion of other things.

2: significant concern

Parent never experiences pleasure in relation to infant or parenting role. Infant is not experienced as a source of well-being to the parent. Parent would like to hand over infant to someone else. Parent finds infant persecutory at all times. Parent expresses overwhelmingly negative feelings towards infant.

Hostility and blame

0: no concern

Parent can bear hostile feelings towards infant without overwhelming guilt or enactment. Parent can move from momentary hostility to more positive feelings. There is a capacity to reflect on hostility, perhaps with humour.

1: some concern

Parent's hostility is sometimes expressed in an unmodulated way in interaction. Parent criticizes, mocks or teases infant or represents infant's behaviour in negative terms.

Parent resists/defends against recognizing/experiencing his/her anger towards infant. Parent appears to act pleasantly towards baby but it feels forced and there is no feeling of affection or of a mutually satisfying interaction.

2: significant concern

Parent experiences infant as the cause of his/her distress. Parent blames infant for his/her own difficulties.

Parent attributes malevolent intent to the infant. Infant is predominantly associated with a bad aspect of family/relative whom parent hates/blames. Infant is repository for parent's negative feelings.

Parent pokes, pinches, hurts infant under the guise of playful teasing and appears to take pleasure in infant's subsequent distress.

Parent is openly hostile, handling infant roughly, and/or expressing anger or disgust.

Parent treats infant with contempt or indifference, avoids all contact with infant.

Hostility in parent is denied, but is expressed in the response of the infant, e.g. biting, aggressive behaviour.

Quality of contact: intrusive/controlling

0: no concern

Parent is able to let infant take control of what he is doing, while maintaining safe boundaries.

1: some concern

Parent repetitively interferes with infant's exploration and play. Parent withholds toy, blocks infant's play or directs infant to a different activity when infant is clearly interested in what he/she is already doing.

Parent makes infant wait for something he/she wants or needs, e.g. food, bottle, treat.

2: significant concern

Parent pervasively interferes with infant's exploration and play. Parent controls infant's activity in all respects. Parent forces infant to continue with an activity despite infant's wish to stop, or parent denies infant game or activity of infant's choice.

Parent is intrusive in terms of body functions. Infant is not allowed to regulate his food or drink intake. Parent imposes rigid toileting routine.

Quality of contact: frightening

0: no concern:

Parent's affect and/or behaviour is transiently frightening for reasons of discipline or safety, and parent is then able to restore positive interaction.

1: some concern

Parent presents threatening behaviour that is not underpinned by intent to harm infant.

Parent moves towards infant in an abrupt, aggressive manner. Parent speaks harshly to infant, raises voice. Parent glares at infant, frowns or grimaces. Parent 'plays' with infant in a frightening way, by chasing, grabbing, tickling infant although infant wishes to escape.

2: significant concern

Parent's feelings /behaviour towards infant are threatening with harmful intent.

Parent shouts abuse, threatens, hits infant.

Parent appears to be constantly on the point of aggressing infant, motionless staring, posture suggesting he/she is waiting to pounce. (Main and Hesse).

Parent appears fearful, responding to an internal anxiety, so that she/he is incapable of comforting infant. Parent appears frightened of infant and presents frightened face to infant. Parent is frightening because he/she presents an affectively dysregulating face to infant.

Parent is frightening because his/her emotions are labile and unpredictable.

Quality of contact: sexualized

0: no concern

Parent shows pleasure in bodily interaction with infant and there is no anxiety or overstimulation. Parent tickles, cuddles or kisses infant in a light-hearted, appreciative manner.

1: some concern

Body boundaries between parent and infant in terms of soothing and stimulation appear confused. Parent behaves towards infant in a manner more appropriate to a partner, requesting physical attention from infant or caressing or frolicking with infant in an overstimulating manner.

Parent continues to offer the breast in an unboundaried fashion, leaving her breasts constantly available to be touched and fondled.

2: significant concern

Parent's and/or infant's body is/are involved in stimulation and excitement of the other. Parent touches infant's body parts inappropriately. Parent encourages sexual behaviour in the infant towards him/herself.

Quality of contact: dissociative

0: no concern

In a highly stressful situation, parent maintains awareness of others and the environment.

1: some concern

Not applicable

2: significant concern

Parent enters a state in which he/she is cut off from infant and from all others. Parent exhibits stilling, with flattened affect, inexpressive face. Parent enters trance-like state, freezes, motionless, eyes unfocused, unresponsive to external world.

Quality of contact: avoidant

0: no concern

Parent responds to infant's seeking play, exploration, and comfort.

1: some concern

Parent often dismisses infant's attempts to get close. Parent places infant facing away from her/him. Parent maintains infant at a distance; for example, encouraging play with toys rather than contact with her/himself. Parent minimizes infant's dependency needs, e.g. suggests that infant can manage without her/him, does not need to be picked up. Parent may respond to positive feelings in infant but finds it difficult to engage when infant is sad or distressed.

2: significant concern

Parent's behaviour precludes infant's attempts to get close. Parent moves away from infant, avoids eye contact, directs infant away from her/himself, fails to pick up infant or offer reassurance by touch or word. Parent dismisses infant's feelings; negative feelings are denied.

Quality of contact: consistency/predictability

0: no concern

Parent is clear in setting limits and parent's behaviour accurately reflects feelings appropriate to the situation. Parent's emotional communications and behaviours to infant can be anticipated in the context of the interaction.

1: some concern

Outburst of unexpected strong emotion is followed by some ability to help infant afterwards - perhaps with some recognition of effect on infant.

Parent accepts one type of behaviour one moment and forbids or becomes upset about it the next.

Parent gives contradictory messages, for example, parent's affect is incongruent with the content of her/his verbal communication. Parent invites closeness and then distances her/himself. Parent expresses pleasure in infant while pushing him/her away.

2: significant concern

Parent moves from expressing one emotional state of mind to another abruptly without appreciation of impact on the infant.

Parent seems to provoke behaviour that he/she condemns.

Parent begins one type of behaviour and then inexplicably discontinues e.g holds out arms to infant and abruptly turns away. Parent demonstrates contradictory behaviour patterns, for example, inviting infant to approach while simultaneously backing away (Main and Hesse).

Appendix 4

PIRAT Coding Manual – Version 3.0

Broughton, Hommel & the Parent-Infant Project,
2014

For copyright reasons this Appendix includes
an excerpt of PIRAT Coding Manual - Version
3.0

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Caring
for young
minds



The Parent-Infant Relational Assessment Tool
Manual for coding the quality of the Parent-Infant Relationship
PIRAT Manual – version 3.0

Carol Broughton, Susanne Hommel and the Parent-Infant Project,
Anna Freud Centre, London – August 2014

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Advice for videotaping parent-infant interactions

PIRAT can be used directly in the healthcare setting without videotaping. If videotaped interactions are required, the following advice might be useful to keep in mind.

Videotapes of parent-infant interactions for PIRAT coding can be done in the parent's home, in a clinic, a treatment room or in a laboratory setting.

If you want to use videotaped interactions for collaborative work or supervision or training purposes make sure to have a consent form available where parents can tick boxes for consent and sign. Discuss with parents the purposes you want to use the video for.



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It is important to carefully select a spot on the floor or seating in the room where the light will fall on parent and baby and parent and baby should face the camera if possible. Do NOT have bright light, e.g. the window, behind parent and baby because you might not be able to see their expressions. If necessary close curtains and blinds and turn on room lights.

Reduce noise as much as possible by turning off radios, TVs, stereos and close open windows in the room. If other family members are present you might want to ask them to be as quiet as possible while filming. Take into account that background noise like fans, air conditioning and the sounds from next door might be very disturbing on a videotape even if the human ear can filter them out.

At home: Ask the parent where they want to sit and ask parent to have a few toys available which the child usually likes and position the camera accordingly. In a treatment room: Put a blanket on the floor and some age appropriate toys on the blanket to invite parent and baby to sit on the blanket and face the camera.

Give the parent the following instruction: "Play with your baby/child as you usually play with each other. You can use the toys or not, whatever you prefer. Try to sit as comfortably as possible and position your baby as you like in relation to you and don't worry about the camera. We will tape a few minutes of your play."

Tape 10 minutes of free play. More than 10 minutes may be too long as this is an intense experience and may be a distressing situation for parent and baby.

After the allotted time turn off the camera and tell mother and baby you have turned it off and thank them. Let parent and baby finish their play in their own time. Tell them they did a wonderful job and you appreciated having been able to observe their play.

Instructions for coding of the quality of the Parent-Infant Relationship with PIRAT



1. PIRAT can be coded from 'live' or videotaped observations.
2. Keep in mind that gender of parent, age and developmental stage of baby/toddler, siblings in the room, different cultural backgrounds, the level of noise, interruptions of interaction/play will influence the observed quality of interaction/play, and might therefore lead you to a more negative rating.
3. Code 'live' observations as directly after the session as possible. Make notes on the note-sheet of each observed behaviour in your own words.
4. If you are coding videotaped observations watch the whole videotaped session of parent-infant interaction without taking notes of any kind to get an overall idea of the quality of the parent-infant interaction.
5. Watch the whole interaction again making notes on the note-sheet in your own words on the overall quality of interaction and the main observations that come to mind while watching the DVD and pause and review the DVD if necessary.
6. Start coding the whole observation on both scales (infant-parent and parent-infant) from what you remember looking for the descriptors in the subscales (i-p: 1-12 and p-i: 1-11) that match your impression of what was going on in the observed interaction. And decide for a level of concern for each subscale.
7. Each subscale should be coded. If you are using DVD watch the DVD again in case of difficulties pinpointing the degree of concern.
8. In the case of difficulties in observing a particular behaviour e.g. the DVD was not clear, or you could not see parent's or infant's expression, you still need to code each subscale. Dyadic interactions reflect internally consistent patterns, it may therefore be possible to code the behaviour in relation to other behaviours you have already coded.
9. In the case of difficulties coding one or the other subscales because you cannot find a matching descriptor, please write down on the note-sheet in your own words what you observed and choose the descriptor that best fits your observation.
10. Please note your coding for each scale on the coding sheet. Ensure that you include all relevant information about the observed session/video clip.
11. Add up the ratings for each scale (infant-parent and parent-infant) and divide it by the number of subscales (i-p: 12, p-i: 11) to create a mean score for each scale.
12. Add up the mean scores for each scale (infant-parent and parent-infant) and divide it by two to create a mean score for the whole observation.

i-p: Infant-parent interaction**i-p:1 Infant's seeking of contact**

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0: no concern

Infant actively looks for contact with parent either through eye gaze, vocalization or physical proximity, depending on infant's age. For example, in the early weeks and months through an attentive gaze and facial expressions; at nine to twelve months through social referencing; seeking physical proximity; later, requesting parent's attention by calling out or drawing her/his attention to something, sharing something with parent.

A mobile infant can go physically back and forth between parent, other people and objects, toys and so forth in the room. The infant uses parent as a secure base and as a source of comfort.

1: moderate concern

Infant seems slow to refer to parent where contact would be expected. Infant seems more self-sufficient than would be expected e.g. too quiet, undemanding baby or mobile infant who rarely returned to touch base, share or look for comfort when hurt or distressed.

Infant's mode of making contact is sometimes upsetting e.g. screaming, throwing things, constantly pulling at parent to get her attention.

2: severe concern

Infant does not initiate or make contact with parent, or makes insufficient contact to facilitate interaction.

Infant is cut off from other people.

Infant seeks contact only around negative emotions e.g. constantly screaming, throwing tantrums, hurting self or others.

Infant cannot separate from parent. Infant clings to parent. Infant is unable to explore the environment.

Infant does not use parent to regulate affect

i-p:2 Responsiveness to contact with parent

0: no concern

Infant uses contact with parent to regulate affect and behaviour. The infant maintains homeostasis in the early weeks and subsequently contact with the parent modulates too high levels of excitation or too extended periods of low arousal.



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Parent and infant are attuned i.e. there is evidence of a psychobiological 'dance' between them whereby each responds to the other's cues. This is evidenced largely through eye contact and gaze, particularly in the early months, but is also evident in vocalizations and touch. The infant's face lights up when the parent smiles and over the course of the early months there is a growing capacity to tolerate heightened states of arousal. After nine months, there is also a marked negative response to prohibitions. Such negative or shame responses are normal as long as the infant regains equilibrium reasonably quickly.

It is important to note that failures of attunement are to be expected. Healthy infants can respond to parent's initiatives to make good the rupture and can persist in trying to regain contact with parent; for example, in seeking out eye contact if parent has turned away too quickly or by breaking off eye gaze if parent persists too long and arousal levels become too high.

Infant has a range of affective responses at his disposal.

1: moderate concern

Infant's response to parent is inhibited or delayed but finally infant is engaged or comforted.

Frequent mismatch leaves infant distressed. Repair takes place but with delay.

Infant has to work hard to gain parent's attention. Infant is overly smiling, lively or compliant. Infant fusses, vocalizes irritably in response to parent's contact. Infant appears dull and inattentive to parent's contact. Infant sometimes avoids eye contact with parent, or monitors parent indirectly.

2: severe concern

Infant persistently avoids eye contact with parent, or monitors parent indirectly and appears noticeably cautious or withdrawn in response to contact with parent.

Infant is frozen, stiffened or frightened.

Infant does not use parent to regulate affect and resorts to self-regulation. For example, excessive hand and limb flapping in early months; restricted affect or reversal of affect as modes of defence, e.g. smiling when being teased and frustrated

i-p:3 Responsiveness to stranger

0: no concern

Infant shows a balance between caution and curiosity, while parent remains the preferred person for safety and comfort.

Infant may not have a lot to do with the stranger at first, especially if age-appropriate stranger anxiety is paramount.

1: moderate concern

Infant at the age of 8-9 months, when age appropriate stranger anxiety is paramount, does not show stranger anxiety at all.

Infant is over-interested in stranger or continues to be overly cautious, but parent can mediate.

2: severe concern

Infant appears very avoidant, apparently ignoring the stranger. Conversely, infant relies on stranger for comfort or protection while seemingly ignoring the parent. Infant overrelies on stranger (new adult) to negotiate difficulties and to offer comfort and support, and appears to be more interested in stranger than parent.

Infant appears to have no sense of boundaries with a stranger.

Infant does not use parent as mediator.



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p-i: Parent-infant interaction

p-i:1 Parent's initiation of physical contact



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0: no concern

Parent initiates/allows body contact with ease and pleasure, e.g. being touched/being playful with infant's body.

Parent holds infant tenderly, facing towards her or positioned so that infant can reach toys or make visual contact with her. Parent caresses or cuddles infant where infant appears emotionally depleted or in low spirits. Parent and infant mould easily into embrace.

1: moderate concern

There is some inflexibility in parent's physical contact. Parent holds infant awkwardly, away from adult's body or in a position that precludes visual contact. Parent is slow to make physical contact even when appropriate.

Parent quite often uses physical contact for her/his own sake. For example, parent pulls infant to her/him when distressed without regard to infant's needs.

2: severe concern

Parent disengages in a way that suggests physical proximity is undesirable, pushes infant away or rigidly prohibits physical contact.

Parent indicates that infant's bodily needs are distasteful.

Parent is intensely physically intrusive. Parent consistently positions her/himself too close to infant or brings face too near to infant's face. Parent's face looms into infant's line of vision. Parent catches hold of infant without warning in a frightening or aggressive manner. Parent pokes, grabs, pulls or otherwise manipulates infant against infant's will or without reference to infant's affect, e.g. aggressive 'tickling' which continues despite infant's resistance. Parent throws toys or other objects at or onto infant or snatches objects from infant. Parent handles infant as if an inanimate object.

Parent physically threatens infant, smacks, slaps, hits or hurts in any way.

Parent fails to keep infant physically safe; does not intervene in a timely fashion where there is potential danger or is not sufficiently physically present.

p-i:2 Parent's initiation of emotional contact

0: no concern

Parent tries to understand his/her own and/or infant's affective experience. Parent has capacity to reflect on own and infant's thoughts and feelings and emotional states.

Parent is emotionally flexible and is able to follow his/her own infant's emotional cues. Parent soothes infant when distressed, shares in infant's joy and pleasure.

Parent can initiate and maintain contact with infant in the face of his/her own preoccupation, or can catch their preoccupation before infant becomes very distressed.



1: moderate concern

Parent sometimes does not use emotional language, whether verbal or nonverbal, in relation to self and/or infant. Parent has limited capacity for reflective functioning in relation to self and infant.

Parent mismatches infant's affect at times, jollying infant along rather than picking up on the affect and modulating it, or continuing to play or tease, or demand a response after infant has withdrawn.

Parent loses track of infant in the face of their preoccupation, even when infant becomes distressed.

2: severe concern

Parent's emotional language pervasively mismatches infant's experience. Parent laughs in response to infant's cries. Parent consistently belittles infant's distress or refuses to acknowledge negative feelings.

Parent emotionally overwhelms infant; for example, ignores infant's cues and continues to escalate excitement after infant has signaled wish to stop.

Parent is very detached emotionally from infant; leaves infant without appropriate stimulation, ignores cues to be picked up, does not respond to cries or vocalizations, lacks affective warmth and responsiveness.

Parent uses infant for own emotional needs at the expense of the infant's own experience of her/himself. Parent gives no indication of reflective functioning in relation to infant.

p-i:3 Parent's playfulness in relation to infant

0: no concern

Parent plays with infant and enjoys infant's playfulness. Parent actively engages with infant either through games such as singing, 'conversation,' verbal or non-verbal turn-taking, or joint attention to toys or other aspects of the environment.



1: moderate concern

Parent finds it difficult to follow the infant's lead in play. Parent's own feelings define perception of infant's playfulness, for example, parent construes as naughtiness infant's pleasure in exploration. Parent does not convey pleasure in play. Parent finds infant's play worrying or troublesome and would prefer infant to sit still or keep quiet.

Parent uses toy to disengage from infant e.g. "you play with it on your own".

Parent initiates or responds to play intrusively without necessarily following infant's lead or leaving sufficient space for infant's creativity.

2: severe concern

Parent does not play with infant where play might be expected or insists on playing when infant isn't ready.

Parent repetitively intrudes upon infant's play to the exclusion of infant. Parent takes over the play as if parent's need is greater than infant's. Parent appears to join in play but in such a way that infant is thwarted.

Parent persistently defines infant's play negatively; for example, parent perceives infant as hostile or deliberately destructive when playing.

Parent prohibits infant's play; removing toys, denying infant access to play materials on the pretext that they are dirty or dangerous.

PIRAT - Coding Sheet



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| | |
|----------|-------------------|
| Child | Child's D.O.B. |
| Parent | Parent's age |
| | Date |
| Comments | Coder |

| i-p: infant-parent interaction | 0: no concern | 1: moderate concern | 2: severe concern |
|---|---------------|---------------------|-------------------|
| i-p:1 Infant's seeking of contact | | | |
| i-p:2 Responsiveness to contact with parent | | | |
| i-p:3 Responsiveness to stranger | | | |
| i-p:4 Ability to communicate needs | | | |
| i-p:5 Ability to be comforted | | | |
| i-p:6 Quality of contact: Aggressive/attacking | | | |
| i-p:7 Quality of contact: Clinging | | | |
| i-p:8 Quality of contact: Frightened/wary | | | |
| i-p:9 Quality of contact: Lack of pleasure | | | |
| i-p:10 Quality of contact: Sexualized | | | |
| i-p:11 Quality of contact: Dissociative | | | |
| i-p:12 Quality of contact: Avoidant | | | |
| Mean score i-p | | | |
| | | | |
| p-i: parent-infant interaction | 0: no concern | 1: moderate concern | 2: severe concern |
| p-i:1 Parent's initiation of physical contact | | | |
| p-i:2 Parent's initiation of emotional contact | | | |
| p-i:3 Parent's playfulness in relation to infant | | | |
| p-i:4 Pleasure in parenting | | | |
| p-i:5 Hostility and blame | | | |
| p-i:6 Quality of contact: Intrusive/controlling | | | |
| p-i:7 Quality of contact: Frightening | | | |
| p-i:8 Quality of contact: Sexualized | | | |
| p-i:9 Quality of contact: Dissociative | | | |
| p-i:10 Quality of contact: Avoidant | | | |
| p-i:11 Quality of contact: Consistency/ predictability | | | |
| Mean score p-i | | | |
| Mean score i-p and p-i | | | |

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Notes for Coding:

| |
|--|
| i-p: infant-parent interaction |
| i-p:1 Infant's seeking of contact |
| i-p:2 Responsiveness to contact with parent |
| i-p:3 Responsiveness to stranger |
| i-p:4 Ability to communicate needs |
| i-p:5 Ability to be comforted |
| i-p:6 Quality of contact: Aggressive/Attacking |
| i-p:7 Quality of contact: Clinging |
| i-p:8 Quality of contact: Frightened/Wary |
| i-p:9 Quality of contact: Lack of pleasure |
| i-p:10 Quality of contact: Sexualized |
| i-p:11 Quality of contact: Dissociative |
| i-p:12 Quality of contact: Avoidant |

Notes for Coding:

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| p-i: parent-infant interaction | |
|---------------------------------------|--|
| p-i:1 | Parent's initiation of physical contact |
| p-i:2 | Parent's initiation of emotional contact |
| p-i:3 | Parent's playfulness in relation to infant |
| p-i:4 | Pleasure in parenting |
| p-i:5 | Hostility and blame |
| p-i:6 | Quality of contact: Intrusive/Controlling |
| p-i:7 | Quality of contact: Frightening |
| p-i:8 | Quality of contact: Sexualized |
| p-i:9 | Quality of contact: Dissociative |
| p-i:10 | Quality of contact: Avoidant |
| p-i:11 | Quality of contact: Consistency/Predictability |

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Appendix 5

PIRAT Global Scales - Version 2.0

Broughton, Hommel, & the Parent-Infant
Project, 2016

Addendum for Coding and Coding Sheet

Hommel, Broughton, & the Parent-Infant
Project, 2016

For copyright reasons this Appendix includes
an excerpt of PIRAT Global Scales Coding
Manual - Version 2.0 and Addendum and
Coding Sheet

Parent-Infant Relational Assessment Tool PIRAT Global Scales

Carol Broughton, Susanne Hommel and the Parent-Infant Project

PIRAT Global Scales, Unpublished Manual - version 2.0,
London, July 2016

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PIRAT Global Scales

(Broughton, Hommel and the Parent-Infant Project, 2014, 2016)

PIRAT Global Scales are a short version of the Parent Infant Relational Assessment Tool (PIRAT). The PIRAT Global Scales were developed to assess the overall dyadic quality of the Parent-Infant Relationship on two scales, the Infant-Parent Global Scale and the Parent-Infant Global Scale. They offer a time-efficient coding guideline to observe and assess the dyadic quality of the parent-infant relationship and assess the overall level of concern. They can be used as a risk assessment tool to differentiate between parent-infant interactions indicating 'no or minor concern' and those causing concern or indicating risk.

PIRAT Global Scales consist of two major scales, the infant-parent scale (i-p) and the parent-infant scale (p-i). These global scales include observational descriptors of specific relational abilities and qualities delineated in the PIRAT infant-parent scale (i-p: 1-12) and parent-infant scale (p-i: 1-11), see introduction to PIRAT (page 3).

The two major global scales comprise a 5-point Likert scale ranging from '0 - No concern: very well attuned' to '4 - Severe concern: pervasive failures of attunement lead to severe disturbance in the relationship'. Cut-off score for the clinical range is '2' indicating concerning disturbances in the relationship.

Assessment of the level of concern focuses on three major themes:

- Degree of observed dyadic attunement
- Frequency of behaviours indicating relational disturbance
- Severity of observed relational disturbance

Coding the dyadic relational behaviours and interactional patterns of parents and infants accordingly should lead to one of the main categories of level of concern.

These categories include anchor points for coding in relation to the specific level of concern:

0. Infant-Parent and Parent-Infant 0 – 'No concern: very well attuned dyadic relationship'
1. Infant-Parent and Parent-Infant 1 – 'Minimal concern: minor difficulties in attunement, but 'good enough' overall relationship'
2. Infant-Parent and Parent-Infant 2 – 'Moderate concern: occasional failures of attunement lead to disturbance in the relationship, sufficient to warrant concern'
3. Infant-Parent and Parent-Infant 3 – 'Considerable concern: ongoing failures of attunement lead to significant disturbance in the relationship'
4. Infant-Parent and Parent-Infant 4 – 'Severe concern: pervasive failures of attunement lead to severe disturbance in the relationship'

In order to make the PIRAT Global Scales more comparable to other coding systems and to offer clinicians overall information about the quality of the infant-parent and parent-infant relationship we arrived at a mean score. The mean score is created by adding up the codings of the infant-parent and parent-infant scales and divide it by two, and it can range from 0 – 4 (no concern to severe concern) and gives an overall indication of the quality of the relationship of parent and infant.

PIRAT Global Scales are stand alone scales which can be used as an assessment tool in their own right. Further research will evaluate the reliability and validity of the PIRAT Global Scales.

Instructions for coding

PIRAT Global Scales consist of an Infant-Parent and a Parent-Infant Scale. Each level of concern comprises descriptors of relational abilities and relational qualities. Each descriptor of an ability or quality has a 'number' (i-p: 1-12 and p-i: 1-11) you will find again on the note sheet and the coding profile attached to the coding sheet. The numbers equate to the subscales on the long version of PIRAT.

When looking for a descriptor to match your observation take into account the rest of the paragraph. If there is an 'OR' included you can choose between two options.

1. PIRAT Global Scale can be coded from 'live' or videotaped observations.
2. Keep in mind that gender of parent, age and developmental stage of baby/toddler, siblings in the room, different cultural backgrounds, the level of noise, interruptions of interaction/play will influence the observed quality of interaction/play, and might therefore lead you to a more negative rating.
3. Code 'live' observations as directly after the session as possible. Make notes on the note-sheet of each observed behaviour in your own words.
4. If you are coding videotaped observations watch the whole videotaped session of parent-infant interaction without taking notes of any kind to get an overall idea of the quality of the parent-infant interaction.
5. Watch the whole interaction again making notes on the note-sheet on the overall quality of interaction and the main observations that come to mind while watching the DVD and pause and review the DVD if necessary. If you are unsure about some behaviours please take note of the timepoint within the clip when observed.
6. Start coding the whole observation on both scales from what you remember, looking for the descriptors that match your impression of what was going on in the observed interaction. And decide a level of concern for each scale, infant-parent and parent-infant.
7. In the case of difficulties to code one or the other scale (infant-parent and parent-infant) or subscales (i-p 1-12 and p-i 1-11), please write down as precisely as possible why you experience it to be difficult to decide upon two levels of concern within a scale and try to decide upon the codings from what you remember.
8. If you are using DVD, watch the DVD again to complete the coding sheet deciding upon the scale that had been difficult to code and note your reasons for deciding on a specific score.
9. Both scales (i-p and p-i) should be scored. If you find it difficult to make up your mind about specific subscales (i-p: 1-12 and p-i: 1-11) go back to the anchor points included in the categories of concern and choose the best match for your overall impression of the observed interaction. And make sure that you note the timepoint.

10. In cases where you are coding infant-parent and parent-infant subscales and one specific coding does not seem to match the other codings, have a look at the coding profile across infant-parent and parent-infant subscales. Looking at the profile you might see mismatches and be able to reflect and maybe change particular codings.
11. When you have finished coding the infant-parent and parent-infant scale make sure that you tick a box on the confidence rating scale according to the level of confidence you have in your coding of the infant-parent and the parent-infant scale.
12. Please note on the note-sheets all the behaviours and qualities (i-p: 1-12 and p-i: 1-11) that you have chosen in order to code the level of concern and tick the boxes on the coding profile.
13. Please note your coding for each scale (infant-parent and parent-infant) on the coding sheet. Ensure that you include all relevant information about the observed session/video clip.
14. Add up the codings for each scale (infant-parent and parent-infant) to create a total raw score for PIRAT Global Scales, and divide it by 2 to create a mean score.

Infant - Parent PIRAT Global Scale

Infant-Parent 0 – No concern: very well attuned dyadic relationship

Relational Ability

Infant actively looks for contact with parent, uses parent to regulate affect and behaviour and uses parent as a secure base and source of comfort. (i-p 1)

Infant can refer to parent, can communicate his/her needs and has a range of affective responses at her/his disposal. (i-p 2)

Infant's response to stranger shows a balance between caution and curiosity while parent remains the preferred person for safety and comfort. OR no evidence of responsiveness to stranger. (i-p 3)

Infant can refer to parent when she/he wants to play, to talk, to be cuddled. (i-p 4)

When distressed, infant allows parent to address her/his distress and the level of distress is reduced quite quickly in response to the parent's actions. (i-p 5)

Relational Quality

Infant can modulate anger and use aggression for mastery and exploration. (i-p 6)

Infant clings to parent where there is a need for security, but can move away at other times. Clinging behaviour is to be expected in situations where infant feels threatened by external circumstances, so that infant's clinging is linked to the situation and can shift. OR no indication of clinging behaviour. (i-p 7)

Infant does not show fear or anxiety that is induced by the parent. (i-p 8)

Infant expresses an expectation of pleasurable exchange with parent. (i-p 9)

There is no indication of sexualized behaviour. (i-p 10)

There is no indication of dissociative behaviour. (i-p 11)

Infant can negotiate intensity and duration of interaction with parent and does not show any indicators of avoidant behaviours. (i-p 12)

Infant-Parent 2 – Some concern: occasional failures of attunement lead to disturbance in the relationship, sufficient to warrant concern

Relational Ability

Infant may sometimes seem slow to refer to parent where contact would be expected OR infant's mode of making contact is sometimes distressing, e.g. pulling at parent, crying and throwing things. (i-p1)

Infant's response to parent is sometimes inhibited or delayed but finally infant is engaged.

Infant has to work hard to gain parent's attention (i-p 2)

Infant is over-interested in stranger OR is overly cautious, but parent can mediate (i-p 3).

Infant shows more or less self-sufficiency than would be expected for his age. Infant tries to communicate needs but often gives up. (i-p 4).

Infant seeks comfort but turns away dissatisfied. Infant seems to be mollified rather than satisfied and the distress appears to remain awaiting an early opportunity to resurface. OR infant has difficulty/takes time responding to parent and the distress is not easily alleviated. Infant initially pushes parent away or lashes out but with persistence can be pacified. OR infant occasionally resorts to self-comfort. Infant may suck thumb, or rub or suck other parts of the body, clothing or other objects as her/his main source of comfort. (i-p 5)

Relational Quality

Infant displays anger or aggression and is slow to respond to parental mediation. Anger or aggression may be expressed towards parent for ignoring or misinterpreting infant's communication, but infant is slow to respond to efforts to repair. (i-p 6)

Clinging behaviour takes a long time to shift. Infant can sometimes move away from parent but allows parent only to move away on his/her own terms. (i-p 7)

Infant occasionally presents behaviours like rigid body tone or withdrawal and avoids eye contact. Further evidence is required. (i-p 8)

Infant appears to respond to pleasurable interactions initiated by parent, but sometimes remains dull/restricted in affect, looks away from parent with blank expression and shifts gaze out of parent's line of vision. Further evidence is required. (i-p 9)

Body boundaries between infant and parent in terms of soothing may appear confused in a way that is not age appropriate. Further evidence is required. (i-p 10)

Infant shows moments of disconnecting and withdrawal from parent but then turns to parent or finds another strategy for soothing. (i-p 11)

Infant may approach parent when feeling content, but maintains a distance unless proximity seeking is paramount. (i-p 12)

Infant-Parent 4 – Severe concern: pervasive failures of attunement lead to severe disturbance in the relationship

Relational Ability

Infant cannot not use parent to regulate affect and habitually resorts to self-regulation (i-p 1)
 Infant is frozen, stiffened in response to contact with parent, e.g. pervasively avoids eye contact OR exhibits reversal of affect OR is hypervigilant and may monitor parent from a distance. OR infant is continually distressed and constantly on the point of disintegration. There is no repair. (i-p 2)

Infant appears to have no sense of boundaries with a stranger, over-relies on stranger to negotiate difficulties while seemingly ignoring the parent (i-p 3)

Infant does not register his own needs and expresses distress by self-harming, head banging, vomiting, food refusal (i-p 4).

Infant appears not to register his/her own needs so that expectable need for comfort is not expressed. OR infant habitually resorts to self-comfort in the absence of interpersonal regulatory transactions. Alternatively, infant withdraws by either physically moving away or becoming dull and glazed in expression. OR infant becomes completely disregulated due to overwhelming distress. Infant may become limp and huddled into a heap. (i-p 5).

Relational Quality

There is a predominance of aggression over other modes of behaviour. The infant kicks, hits, bites, spits, throws toys or other objects at parent, other adult, or directs aggressive acts towards her/himself. The aggression has acquired a sadistic/destructive quality. OR infant is extremely passive and there is a severe restriction or reversal of affect. (i-p 6)

Infant cannot move away from parent or let parent move away from him. OR there is a complete absence of clinging behaviours where these would be expected. (i-p 7)

Infant shows through feelings/behaviour experiences of being frightened e.g., excessive caution, stilling, freezing, panic, which is induced by parent. (i-p 8)

Infant does not display pleasure, e.g. smiling, cooing, gurgling, vocalising, even if parent initiates interactions. Infant appears bored and inattentive, OR cautious and wary, eyes may appear fixed, unblinking or downcast and glazed. External manifestations of pleasure, if any, appear false, e.g. smiling out of context or suddenly exhibiting bright, excited expression before resuming stiff, closed off demeanour. (i-p 9)

Infant's and/or parent's body is/are involved in stimulation and excitement of the other. For example, infant repeatedly caresses intimate parts of parent's body without age appropriate inhibition. Infant appears to be overstimulated or overexcited. OR infant relates in a seductive way with adults, e.g. touching, kissing, overly close physical contact. There is overt sexual presentation by infant. (i-p 10)

Infant shows pervasive pattern of disconnecting from parent. Infant displays extreme physical/emotional withdrawal from parent into states of self-stilling. Infant may become excessively still, stares into space with a dazed expression, cut off from self, parent and environment. (i-p 11)

Infant consistently appears to exclude parent from his/her focus of attention. Infant may nevertheless exhibit tension or anxiety and close observation suggests that despite appearances infant is monitoring parent's presence at a distance. (i-p 12)

Parent - Infant PIRAT Global Rating Scale

Parent-Infant 0 - No concern: very well attuned dyadic relationship

Relational Ability

Parent initiates/allows contact with ease and pleasure, e.g. being touched and being playful with infant's body. Parent positions the infant so that s/he can make visual contact or can reach toys. Parent and infant mould easily into embrace. (p-i 1)

Parent has capacity to reflect on own and infant's thoughts and feelings and emotional states. Parent is emotionally flexible and is able to follow his/her own infant's emotional cues. Parent soothes infant when distressed, shares in infant's joy and pleasure. Parent can initiate and maintain contact with infant in the face of his/her own preoccupation, or can catch their preoccupation before infant becomes distressed. (p-i 2)

Parent plays with infant and enjoys infant's playfulness. Parent actively engages with infant either through games such as singing, 'conversation,' verbal or non-verbal turn-taking, or joint attention to toys or other aspects of the environment. (p-i 3)

Parent spontaneously conveys pleasure in infant and in parenting role, but can also recognize difficulties inherent in parenting. The infant is experienced as a source of well-being to the parent. (p-i 4)

Parent can bear ordinary negative feelings towards infant, e.g. annoyance, without overwhelming guilt or enactment. (p-i 5)

Relational Quality

Parent is able to let infant take control of what he is doing, while maintaining safe boundaries. (p-i 6)

Parent's affect and/or behaviour is transiently frightening for reasons of discipline or safety, and parent is then able to restore positive interaction. (p-i 7)

Parent shows pleasure in bodily interaction with infant and there is no indication of sexualized behaviour or sexualized overstimulation. (p-i 8)

There is no evidence of dissociative behaviour. In a highly stressful situation, parent maintains awareness of others and the environment. (p-i 9)

There is no evidence of avoidant behaviours in the parent. Parent responds to infant's seeking play, exploration, and comfort. (p-i 10)

Parent is clear in setting limits and parent's behaviour accurately reflects feelings appropriate to the situation. Parent's emotional communications and behaviours to infant can be anticipated in the context of the interaction. (p-i 11)

Parent-Infant 2 – Some concern: occasional failures of attunement lead to disturbance in the relationship, sufficient to warrant concern

Relational Ability

Parent persistently holds infant awkwardly, away from parent's body or in a position that precludes physical contact. (p-i 1)

Parent consistently does not use emotional language, whether verbal or nonverbal, in relation to self and/or infant. Parent has limited capacity for reflective functioning in relation to self and infant. Parent often mismatches infant's affect, jollyng infant along rather than picking up on the affect and modulating it, or continuing to play or tease, or demand a response after infant has withdrawn. Parent loses track of infant in the face of their preoccupation, even when infant becomes distressed. (p-i 2)

Parent's own feelings may define perception of infant's playfulness, for example, parent sometimes construes as naughtiness infant's pleasure in exploration. Parent may use toy to disengage from infant e.g. "you play with it on your own". (p-i 3)

Parent speaks of pleasure, but rarely conveys pleasure. Parent sometimes sees infant as a burden, tying her to the house, preventing her from pursuing her interests, career or social life OR parent is over-invested in infant, committed to parenting role to the exclusion of other things. (p-i 4)

Parent's hostility is sometimes expressed in an unmodulated way in interaction. Parent criticizes, mocks or teases infant or represents infant's behaviour in negative terms. OR parent resists/defends against recognizing/experiencing his/her anger towards infant, for example parent acts pleasantly towards baby but it feels forced. (p-i 5)

Relational Quality

Parent interferes with infant's exploration and play and continues to withhold toys, blocks infant's play or directs infant to a different activity when infant is clearly interested in what he/she is already doing. Parent makes infant wait for something he/she wants or needs, e.g. food, bottle, treat. (p-i 6)

Parent moves towards infant in an abrupt manner. Parent raises voice and 'plays' with infant in an unmodulated way by chasing, tickling infant so that infant shows irritation, startles or wishes to escape. (p-i 7)

Body boundaries between parent and infant in terms of soothing and stimulation appear constantly confused. For example, parent offers older baby the breast in an unboundaried fashion, leaving her breasts constantly available to be touched and fondled. (p-i 8)

Parent fleetingly enters a state of being cut-off from infant and others but quickly recovers awareness of infant and others. (p-i 9)

Parent minimizes infant's dependency needs, e.g. suggests that infant can manage without her/him, does not need to be picked up. Parent may respond to positive feelings in infant but finds it difficult to engage when infant is sad or distressed. (p-i 10)

Outburst of unexpected strong emotion is followed by some ability to help infant afterwards - perhaps with some recognition of effect on infant. (p-i 11)

Parent-Infant 4 – Severe concern: pervasive failures of attunement lead to severe disturbance in the relationship

Relational Ability

Parent disengages in a way that suggests physical proximity is undesirable or that infant's bodily needs are distasteful. Parent pushes infant away or rigidly prohibits physical contact and fails to keep infant physically safe. OR parent is intensely physically intrusive and constantly positions him/herself too close to infant, and pokes, grabs, pulls, or otherwise manipulates infant against infant's will. Parent handles infant as an inanimate object. Parent physically threatens infant, smacks, slaps, hits or hurts in any way. (p-i 1)

Parent's emotional language pervasively mismatches infant's experience. Parent laughs in response to infant's cries and consistently belittles infant's distress or refuses to acknowledge negative feelings. Parent either emotionally overwhelms infant or is very detached emotionally from infant. Parent uses infant for own emotional needs at the expense of the infant's own experience of her/himself. Parent gives no indication of reflective functioning in relation to infant. (p-i 2)

Parent repetitively intrudes upon infant's play to the exclusion of infant. Parent takes over the play as if parent's need is greater than infant's. Parent appears to join in play but in such a way that infant is thwarted. OR parent persistently defines infant's play negatively; for example, parent perceives infant as hostile or deliberately destructive when playing. Parent prohibits infant's play. (p-i 3)

Parent never experiences pleasure in relation to infant or parenting role. Infant is not experienced as a source of well-being to the parent. Parent would like to hand over infant to someone else. Parent finds infant persecutory at all times. Parent expresses overwhelmingly negative feelings towards infant. (p-i 4)

Parent experiences infant as the cause of his/her distress. Parent blames infant for his/her own difficulties and attributes malevolent intent to the infant. Parent pokes, pinches, hurts infant under the guise of playful teasing and appears to take pleasure in infant's subsequent distress. Parent is openly hostile, handling infant roughly, and/or expressing anger or disgust. Parent treats infant with contempt or indifference, avoids all contact with infant. OR hostility in parent is denied, but is expressed in the response of the infant, e.g. biting, aggressive behaviour. (p-i 5)

Relational Quality

Parent controls infant's activity in all respects, e.g. withholding physical and/or emotional interaction. Parent is intrusive in terms of body functions. Infant is not allowed to regulate his food or drink intake. Parent imposes rigid toileting routine. (p-i 6)

Parent's feelings/behaviour towards infant are threatening with harmful intent. Parent shouts abuse, threatens, hits infant. Parent appears to be constantly on the point of aggressing infant, motionless staring, posture suggesting he/she is waiting to pounce. OR parent appears frightened of infant and is frightening because he/she presents an affectively dysregulating face to infant. Parent is frightening to the baby because his/her emotions are labile and unpredictable, or parent is emotionally unavailable, withdrawn, or conveys extreme helplessness. (p-i 7)

Parent's and/or infant's body is/are involved in stimulation and excitement of the other. Parent touches infant's body parts inappropriately. Parent encourages sexualized behaviour in the infant towards him/herself. (p-i 8)

Parent enters a state in which he/she is cut off from infant and from all others. Parent enters trance-like state, freezes, motionless, eyes unfocused, unresponsive to external world. (p-i 9)

Parent's behaviour precludes infant's attempts to get close. Parent moves away from infant, avoids eye contact, directs infant away from her/himself, fails to pick up infant or offer reassurance by touch or word. Parent habitually dismisses infant's feelings; negative feelings are consistently denied. (p-i 10)

Parent's affect is extremely labile and parent moves from expressing one emotional state of mind to another abruptly without appreciation of impact on the infant. Parent seems to provoke behaviour that he/she condemns. Parent begins one type of behaviour and then inexplicably discontinues, for example, parent starts to play with infant and abruptly turns away. Parent demonstrates contradictory behaviour patterns, for example, inviting closeness while simultaneously backing away. OR consistency/predictability based only on lack of engagement. (p-i 11)

PIRAT Global Scales

Addendum for Coding and Coding Sheet

Susanne Hommel, Carol Broughton and the Parent-Infant Project

PIRAT Global Scales Manual - version 2.0,
London, July 2016

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Infant - Parent Subscales

| i-p 1 | Infant's seeking of contact |
|--------------|---|
| 0 | Infant actively looks for contact with parent, uses parent to regulate affect and behaviour and uses parent as a secure base and source of comfort. |
| 1 | Infant is occasionally slow to refer to parent but overall this is not characteristic of the relationship. |
| 2 | Infant may sometimes seem slow to refer to parent where contact would be expected OR infant's mode of making contact is sometimes distressing, e.g. pulling at parent, crying and throwing things. |
| 3 | Infant seems more self-sufficient than would be expected, e.g. too quiet undemanding baby or infant who rarely returns to touch base or look for comfort even when distressed OR infant seeks contact predominantly around negative emotions. |
| 4 | Infant cannot not use parent to regulate affect and habitually resorts to self-regulation. |

| i-p 2 | Responsiveness to contact |
|--------------|---|
| 0 | Infant can refer to parent, can communicate his/her needs and has a range of affective responses at her/his disposal. |
| 1 | Failures in attunement are to be expected and infant persists in trying to regain contact with parent OR can break off eye gaze if arousal levels become too high. |
| 2 | Infant's response to parent is sometimes inhibited or delayed but finally infant is engaged. Infant has to work hard to gain parent's attention. |
| 3 | Frequent mismatch leaves infant distressed and there is little evidence of repair. Infant is overly smiling and compliant OR overly cautious, OR dull and inattentive. |
| 4 | Infant is frozen, stiffened in response to contact with parent, e.g. pervasively avoids eye contact OR exhibits reversal of affect OR is hypervigilant and might monitor parent from a distance. OR infant is continually distressed and constantly on the point of disintegration. There is no repair. |

| i-p 3 | Responsiveness to stranger |
|--------------|---|
| 0 | Infant's response to stranger shows a balance between caution and curiosity while parent remains the preferred person for safety and comfort. OR no evidence. |
| 1 | Infant may not have a lot to do with stranger, especially if age appropriate stranger anxiety is paramount. |
| 2 | Infant is over-interested in stranger OR is overly cautious, but parent can mediate. |
| 3 | Infant does not use parent as a mediator when faced with a stranger OR appears to be more interested in stranger than in parent. |
| 4 | Infant appears to have no sense of boundaries with a stranger, over-relies on stranger to negotiate difficulties while seemingly ignoring the parent. |

Parent – Infant Subscales

| p-i 1 | Parent's initiation of physical contact |
|--------------|--|
| 0 | Parent initiates/allows contact with ease and pleasure, e.g. being touched and being playful with infant's body. Parent positions the infant so that s/he can make visual contact or can reach toys. Parent and infant mould easily into embrace. |
| 1 | There is some inflexibility in parent's physical contact. Parent is sometimes slow to make physical contact but responds appropriately after a while. |
| 2 | Parent persistently holds infant awkwardly, away from parent's body or in a position that precludes physical contact. |
| 3 | Parent's use of physical contact is often without regard to infant's needs. Parent either ignores infants request for physical contact or uses physical contact for his/her own sake. For example parent pulls infant to her/him when distressed without regard to infants need. |
| 4 | Parent disengages in a way that suggests physical proximity is undesirable or that infant's bodily needs are distasteful. Parent pushes infant away or rigidly prohibits physical contact and fails to keep infant physically safe. OR parent is intensely physically intrusive and constantly positions him/herself too close to infant, and pokes, grabs, pulls, or otherwise manipulates infant against infant's will. Parent handles infant as an inanimate object. Parent physically threatens infant, smacks, slaps, hits or hurts in any way. |

| p-i 2 | Parent's initiation of emotional contact |
|--------------|---|
| 0 | Parent has capacity to reflect on own and infant's thoughts and feelings and emotional states. Parent is emotionally flexible and is able to follow his/her own infant's emotional cues. Parent soothes infant when distressed, shares in infant's joy and pleasure. Parent can initiate and maintain contact with infant in the face of his/her own preoccupation, or can catch their preoccupation before infant becomes distressed. |
| 1 | Parent sometimes does not use emotional language, whether verbal or nonverbal, in relation to self and/or infant but shows some capacity for reflective functioning in relation to self and infant. Parent might mismatch infant's affect at times, jollying infant along rather than picking up on the affect and modulating it, or continuing to play or tease, but sufficient repair takes place. When preoccupied parent can catch their preoccupation before infant becomes distressed. |
| 2 | Parent consistently does not use emotional language, whether verbal or nonverbal, in relation to self and/or infant. Parent has limited capacity for reflective functioning in relation to self and infant. Parent often mismatches infant's affect, jollying infant along rather than picking up on the affect and modulating it, or continuing to play or tease, or demand a response after infant has withdrawn. Parent loses track of infant in the face of their preoccupation, even when infant becomes distressed. |
| 3 | Parent sometimes belittles infant's distress or refuses to acknowledge negative feelings. Parent often emotionally overwhelms infant; for example, ignores infant's cues and continues to escalate excitement after infant has signaled wish to stop. Parent leaves infant without appropriate stimulation, ignores cues to be picked up, does not respond to cries or vocalizations, lacks affective warmth and responsiveness. |
| 4 | Parent's emotional language pervasively mismatches infant's experience. Parent laughs in response to infant's cries and consistently belittles infant's distress or refuses to acknowledge negative feelings. Parent either emotionally overwhelms infant or is very detached emotionally from infant. Parent uses infant for own emotional needs at the expense of the infant's own experience of her/himself. Parent gives no indication of reflective functioning in relation to infant. |

| p-i 3 | Parent's playfulness in relation to infant |
|-------|---|
| 0 | Parent plays with infant and enjoys infant's playfulness. Parent actively engages with infant either through games such as singing, 'conversation,' verbal or non-verbal turn-taking, or joint attention to toys or other aspects of the environment. |
| 1 | Parent sometimes finds it difficult to follow the infant's lead in play, but there are playful interactions. |
| 2 | Parent's own feelings may define perception of infant's playfulness, for example, parent sometimes construes as naughtiness infant's pleasure in exploration. Parent may use toy to disengage from infant e.g. "you play with it on your own". |
| 3 | Parent does not play with infant where play might be expected. Parent does not convey pleasure in play. Parent finds infant's play worrying or troublesome and would prefer infant to sit still or keep quiet. OR parent initiates or responds to play intrusively without necessarily following infant's lead or leaving sufficient space for infant's creativity. |
| 4 | Parent repetitively intrudes upon infant's play to the exclusion of infant. Parent takes over the play as if parent's need is greater than infant's. Parent appears to join in play but in such a way that infant is thwarted. OR parent persistently defines infant's play negatively; for example, parent perceives infant as hostile or deliberately destructive when playing. Parent prohibits infant's play. |

Additions to the PIRAT Global Scales Coding Sheet

Susanne Hommel, Carol Broughton and the Parent-Infant Project

1. PIRAT Global Scales – Coding Profile

| | no concern | | concern | | |
|--|------------|----------|----------|----------|----------|
| i-p: Infant-parent interaction | 0 | 1 | 2 | 3 | 4 |
| i-p:1 Infant's seeking of contact | | | | | |
| i-p:2 Responsiveness to contact with parent | | | | | |
| i-p:3 Responsiveness to stranger | | | | | |
| i-p:4 Ability to communicate needs | | | | | |
| i-p:5 Ability to be comforted | | | | | |
| i-p:6 Quality of contact: Aggressive/Attacking | | | | | |
| i-p:7 Quality of contact: Clinging | | | | | |
| i-p:8 Quality of contact: Frightened/Wary | | | | | |
| i-p:9 Quality of contact: Lack of pleasure | | | | | |
| i-p:10 Quality of contact: Sexualized | | | | | |
| i-p:11 Quality of contact: Dissociative | | | | | |
| i-p:12 Quality of contact: Avoidant | | | | | |
| | no concern | | concern | | |
| p-i: parent infant interaction | 0 | 1 | 2 | 3 | 4 |
| p-i:1 Parent's initiation of physical contact | | | | | |
| p-i:2 Parent's initiation of emotional contact | | | | | |
| p-i:3 Parent's playfulness in relation to infant | | | | | |
| p-i:4 Pleasure in parenting | | | | | |
| p-i:5 Hostility and blame | | | | | |
| p-i:6 Quality of contact: Intrusive/controlling | | | | | |
| p-i:7 Quality of contact: Frightening | | | | | |
| p-i:8 Quality of contact: Sexualized | | | | | |
| p-i:9 Quality of contact: Dissociative | | | | | |
| p-i:10 Quality of contact: Avoidant | | | | | |
| p-i:11 Q of contact: Consistency/predictability | | | | | |

The coding profile of infant-parent and parent-infant subscales gives a visual overview of the notes on coding included in the PIRAT Global Scales coding sheet. Infant-parent and parent-infant relational abilities and qualities described in the PIRAT Global Scales manual for coding create an overall 'picture' of the dyadic dynamics of parent-infant interactions. Reliable codings of the quality of the infant-parent and parent-infant relationship are consistent with each other and reflect the dyadic turntaking and attunement of parent and infant. Reliable codings 'make sense' of infant's and parent's behaviours, actions and reactions, and the global infant-parent and parent-infant level of concern.

Therefore, the coding profile stimulates a final reflection on the overall assessment of the parent-infant relational quality and an opportunity to identify mismatches in cases where one specific coding does not seem to match the other codings of infant-parent and/or parent-infant subscales OR cases where the infant-parent codings do not match the parent-infant codings in general.

For example, infant parent sexualized 0 (i-p: 10) does not match parent-infant sexualized 3 (p-i: 8) or more general, infant-parent 0 or 1 over all i-p subscales does not match parent-infant 3 over all p-i subscales.

Examples for mismatches in infant-parent and parent-infant codings are part of the PIRAT Global Scales training and will be highlighted and explained during training.

Instruction:

In cases where you are coding infant-parent and parent-infant subscales and one specific coding does not seem to match the other codings, have a look at the coding profile across infant-parent and parent-infant subscales. Looking at the profile you might see mismatches and be able to reflect and maybe change particular codings.

And:

Please note on the note-sheets all the behaviours and qualities (i-p: 1-12 and p-i: 1-11) that you have chosen in order to code the level of concern and tick the boxes on the coding profile.

2. PIRAT Global Scales – Confidence Rating

The confidence rating scale indicates the level of confidence a rater has in his/her coding of the infant-parent and the parent-infant scale. The confidence rating was included for research purposes to be able to evaluate correlations of confidence in codings and the level of interrater reliability.

Instruction:

When you have finished coding the infant-parent and parent-infant scale make sure that you tick a box on the confidence rating scale according to the level of confidence you have in your coding of the infant-parent and the parent-infant scale.

| Infant-Parent Global Scale | | | | | | | Please tick box |
|---|------------|-------------|-------------|---------------|---------------|-----------------|-----------------|
| Please tick box: I am ... confident of my coding: | fully 5 | mostly 4 | fairly 3 | somewhat 2 | slightly 1 | not at all 0 | |

| Parent-Infant Global Scale | | | | | | | Please tick box |
|---|------------|-------------|-------------|---------------|---------------|-----------------|-----------------|
| Please tick box: I am ... confident of my coding: | fully 5 | mostly 4 | fairly 3 | somewhat 2 | slightly 1 | not at all 0 | |

3. PIRAT Global Scales – Mean Score

The mean score indicates a mean level of concern of the infant-parent and the parent-infant scale. The mean score was added to the coding sheet for research purposes to evaluate correlations of mean score and clinical cut-off score.

Instruction:

Add up the codings for each scale (infant-parent and parent-infant) to create a total raw score for PIRAT Global Scales, and divide it by 2 to create the mean score indicating a global level of concern.

| | | | | | | | |
|------------|-----|---|-----|---|-----|--------------|--|
| Mean score | i-p | + | p-i | = | sum | divided by 2 | |
|------------|-----|---|-----|---|-----|--------------|--|

PIRAT Global Scales – Coding Sheet

Coding Profile

| | no concern | | concern | | |
|---|------------|----------|----------|----------|----------|
| | 0 | 1 | 2 | 3 | 4 |
| i-p: Infant-parent interaction | 0 | 1 | 2 | 3 | 4 |
| i-p:1 Infant's seeking of contact | | | | | |
| i-p:2 Responsiveness to contact with parent | | | | | |
| i-p:3 Responsiveness to stranger | | | | | |
| i-p:4 Ability to communicate needs | | | | | |
| i-p:5 Ability to be comforted | | | | | |
| i-p:6 Quality of contact: Aggressive/Attacking OR Inhibition of aggression | | | | | |
| i-p:7 Quality of contact: Clinging | | | | | |
| i-p:8 Quality of contact: Frightened/Wary | | | | | |
| i-p:9 Quality of contact: Lack of pleasure | | | | | |
| i-p:10 Quality of contact: Sexualized | | | | | |
| i-p:11 Quality of contact: Dissociative | | | | | |
| i-p:12 Quality of contact: Avoidant | | | | | |
| | | | | | |
| | no concern | | concern | | |
| | 0 | 1 | 2 | 3 | 4 |
| p-i: parent infant interaction | 0 | 1 | 2 | 3 | 4 |
| p-i:1 Parent's initiation of physical contact | | | | | |
| p-i:2 Parent's initiation of emotional contact | | | | | |
| p-i:3 Parent's playfulness in relation to infant | | | | | |
| p-i:4 Pleasure in parenting | | | | | |
| p-i:5 Hostility and blame | | | | | |
| p-i:6 Quality of contact: Intrusive/controlling | | | | | |
| p-i:7 Quality of contact: Frightening | | | | | |
| p-i:8 Quality of contact: Sexualized | | | | | |
| p-i:9 Quality of contact: Dissociative | | | | | |
| p-i:10 Quality of contact: Avoidant | | | | | |
| p-i:11 Q of contact: Consistency/predictability | | | | | |

Coding Sheet

| | |
|--------|----------------|
| Child | Child's D.O.B. |
| Parent | Parent's age |
| Coder | Date |

| Infant-Parent Global Scale | | | | | | | Please tick box |
|---|--|------------|-------------|-------------|---------------|---------------|-----------------|
| 'No concern: very well attuned dyadic relationship' | | | | | | | 0 |
| Minimal concern: minor difficulties in attunement, but 'good enough' overall relationship' | | | | | | | 1 |
| Moderate concern: occasional failures of attunement lead to disturbance in the relationship, sufficient to warrant concern' | | | | | | | 2 |
| Considerable concern: ongoing failures of attunement lead to significant disturbance in the relationship' | | | | | | | 3 |
| Severe concern: pervasive failures of attunement lead to severe disturbance in the relationship' | | | | | | | 4 |
| Notes: | | | | | | | |
| Please tick box: I am ... confident of my coding: | | fully 5 | mostly 4 | fairly 3 | somewhat 2 | slightly 1 | not at all 0 |

| Parent-Infant Global Scale | | | | | | | Please tick box |
|---|--|------------|-------------|-------------|---------------|---------------|-----------------|
| 'No concern: very well attuned dyadic relationship' | | | | | | | 0 |
| Minimal concern: minor difficulties in attunement, but 'good enough' overall relationship' | | | | | | | 1 |
| Moderate concern: occasional failures of attunement lead to disturbance in the relationship, sufficient to warrant concern' | | | | | | | 2 |
| Considerable concern: ongoing failures of attunement lead to significant disturbance in the relationship' | | | | | | | 3 |
| Severe concern: pervasive failures of attunement lead to severe disturbance in the relationship' | | | | | | | 4 |
| Notes: | | | | | | | |
| Please tick box: I am ... confident of my coding: | | fully 5 | mostly 4 | fairly 3 | somewhat 2 | slightly 1 | not at all 0 |

| | | | | | | | |
|------------|-----|---|-----|---|-----|--------------|--|
| Mean score | i-p | + | p-i | = | sum | divided by 2 | |
|------------|-----|---|-----|---|-----|--------------|--|

Notes on coding:

| i-p: Infant-parent interaction | |
|---------------------------------------|--|
| i-p:1 | Infant's seeking of contact |
| i-p:2 | Responsiveness to contact with parent |
| i-p:3 | Responsiveness to stranger |
| i-p:4 | Ability to communicate needs |
| i-p:5 | Ability to be comforted |
| i-p:6 | Quality of contact: Aggressive/Attacking OR Inhibition of aggression |
| i-p:7 | Quality of contact: Clinging |
| i-p:8 | Quality of contact: Frightened/Wary |
| i-p:9 | Quality of contact: Lack of pleasure |
| i-p:10 | Quality of contact: Sexualized |
| i-p:11 | Quality of contact: Dissociative |
| i-p:12 | Quality of contact: Avoidant |

| p-i: Parent-infant interaction | |
|---------------------------------------|--|
| p-i:1 | Parent's initiation of physical contact |
| p-i:2 | Parent's initiation of emotional contact |
| p-i:3 | Parent's playfulness in relation to infant |
| p-i:4 | Pleasure in parenting |
| p-i:5 | Hostility and blame |
| p-i:6 | Quality of contact: Intrusive/Controlling |
| p-i:7 | Quality of contact: Frightening |
| p-i:8 | Quality of contact: Sexualized |
| p-i:9 | Quality of contact: Dissociative |
| p-i:10 | Quality of contact: Avoidant |
| p-i:11 | Quality of contact: Consistency/Predictability |

Advice for videotaping parent-infant interactions for PIRAT Coding

PIRAT can be used directly in the healthcare setting without videotaping. If videotaped interactions are required, the following advice might be useful to keep in mind.

Videotapes of parent-infant interactions for PIRAT coding can be done in the parent's home, in a clinic, a treatment room or in a laboratory setting.

If you want to use videotaped interactions for collaborative work or supervision or training purposes make sure to have a consent form available where parents can tick boxes for consent and sign. Discuss with parents the purposes you want to use the video for.

It is important to carefully select a spot on the floor or seating in the room where the light will fall on parent and baby and parent and baby should face the camera if possible. Do NOT have bright light, e.g. the window, behind parent and baby because you might not be able to see their expressions. If necessary close curtains and blinds and turn on room lights.

Reduce noise as much as possible by turning off radios, TVs, stereos and close open windows in the room. If other family members are present you might want to ask them to be as quiet as possible while filming. Take into account that background noise like fans, air conditioning and the sounds from next door might be very disturbing on a videotape even if the human ear can filter them out.

At home: Ask the parent where they want to sit and ask parent to have a few toys available which the child usually likes and position the camera accordingly. In a treatment room: Put a blanket on the floor and some age appropriate toys on the blanket to invite parent and baby to sit on the blanket and face the camera.

Give the parent the following instruction: "Play with your baby/child as you usually play with each other. You can use the toys or not, whatever you prefer. Try to sit as comfortably as possible and position your baby as you like in relation to you and don't worry about the camera. We will tape a few minutes of your play."

Tape 10 minutes of free play. More than 10 minutes may be too long as this may be an intense experience for parent and baby.

After the allotted time turn off the camera and tell mother and baby you have turned it off and thank them. Let parent and baby finish their play in their own time. Tell them that you appreciated having been able to observe their play.

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Carol Broughton's thesis can be accessed at the Anna Freud Centre Library, 'reference only', by appointment with the librarian Anne Knox – anne.knox@annafreud.org

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Appendix 6

German translation of PIRAT Global Scales

Coding Manual – Version 2.0

Broughton, Hommel & the Parent-Infant Project,
2016 - Translation: Susanne Hommel

For copyright reasons this Appendix includes
an excerpt of the German translation of PIRAT
Global Scales Coding Manual - Version 2.0

PIRAT Global Scales Addendum – German Version

Hommel, Broughton & the Parent-Infant Project, 2016

Translation Susanne Hommel

Examples for

Infant - Parent Interaction

Säuglings - Eltern - Interaktion

| i-p 1 | Infant's seeking of contact | Kindliche Suche nach Kontakt |
|----------|---|--|
| 0 | Infant actively looks for contact with parent, uses parent to regulate affect and behaviour and uses parent as a secure base and source of comfort. | Das Kind sucht aktiv den Kontakt mit den Eltern, verwendet diese, um Gefühle und Verhalten zu regulieren und es benutzt die Eltern als sichere Basis und Quelle des Trostes. |
| 1 | Infant is occasionally slow to refer to parent but overall this is not characteristic of the relationship. | Das Kind ist gelegentlich etwas verlangsamt dabei, die Eltern einzubeziehen. Dies ist aber insgesamt nicht charakteristisch für die Beziehung. |
| 2 | Infant may sometimes seem slow to refer to parent where contact would be expected Or infant's mod of making contact is sometimes distressing, e.g. pulling at parent, crying and throwing things. | Das Kind wirkt manchmal bei der Einbeziehung der Eltern verzögert, wo man Kontakt erwarten würde. ODER: Die Art wie das Kind Kontakt aufnimmt ist manchmal beunruhigend, wenn es z.B. an den Eltern zerrt, weint und mit Gegenständen wirft. |
| 3 | Infant seems more self-sufficient than would be expected, e.g. too quiet undemanding baby or infant who rarely returns to touch base or look for comfort even when distressed OR infant seeks contact predominantly around negative emotions. | Das Kind wirkt selbstgenügsamer als zu erwarten wäre, z.B. ist es ein zu ruhiges anspruchsloses Baby oder Kleinkind, das die Eltern selten als sichere Basis nutzt ODER bei ihnen Trost sucht, wenn es beunruhigt ist ODER das Kind sucht Kontakt überwiegend mit negativen Gefühle. |
| 4 | Infant cannot not use parent to regulate affect and habitually resorts to self-regulation. | Das Kind kann die Eltern nicht zur Affektregulation nutzen und benutzt stattdessen als Ausweg regelmäßig die Selbstregulierung. |

| i-p 2 | Responsiveness to contact | Ansprechbarkeit für Kontakt |
|------------------|---|---|
| 0 | Infant can refer to parent, can communicate his/her needs and has a range of affective responses at her/his disposal. | Das Kind kann sich auf die Eltern beziehen, seine Bedürfnisse kommunizieren und hat eine Auswahl an affektiven Antworten zur Verfügung. |
| 1 | Failures in attunement are to be expected and infant persists in trying to regain contact with parent OR can break off eye gaze if arousal levels become too high. | Fehler in der Abstimmung sind zu erwarten und (aber) das Kind besteht darauf, den Kontakt mit den Eltern zurück zu gewinnen ODER es kann den Blickkontakt abbrechen, wenn das Erregungsniveau zu hoch wird. |
| 2 | Infant's response to parent is sometimes inhibited or delayed but finally infant is engaged. Infant has to work hard to gain parent's attention. | Die kindliche Reaktion auf seine Eltern wirkt manchmal gehemmt oder verzögert, aber letztlich ist das Kind engagiert. Das Kind muss hart arbeiten, um die Aufmerksamkeit der Eltern zu gewinnen. |
| 3 | Frequent mismatch leaves infant distressed and there is little evidence of repair. Infant is overly smiling and compliant OR overly cautious, OR dull and inattentive. | Häufige Missverständnisse lassen das Kind beunruhigt zurück, und es gibt kaum Anzeichen der Wiedergutmachung. Das Kind lächelt übermäßig und wirkt übermäßig angepasst ODER übermäßig vorsichtig ODER es wirkt stumpf und unaufmerksam. |
| 4 | Infant is frozen, stiffened in response to contact with parent, e.g. pervasively avoids eye contact OR exhibits reversal of affect OR is hypervigilant and might monitor parent from a distance. OR infant is continually distressed and constantly on the point of disintegration. There is no repair. | Das Kind wirkt eingefroren, macht sich als Reaktion auf den Kontakt mit den Eltern steif, z.B. vermeidet es Blickkontakt ODER zeigt gegensätzliches Verhalten ODER ist übermäßig vorsichtig und beobachtet die Eltern möglicher Weise aus der Ferne. ODER das Kind ist ständig beunruhigt und ständig kurz vor dem Zusammenbruch. Es gibt keine Wiedergutmachung. |

| i-p 3 | Responsiveness to stranger | Kindliche Reaktion auf die/den Fremde/n |
|----------|---|---|
| 0 | Infant's response to stranger shows a balance between caution and curiosity while parent remains the preferred person for safety and comfort. | Die kindliche Reaktion auf Fremde zeigt eine Balance zwischen Vorsicht und Neugier, die Eltern bleiben aber die bevorzugten Personen für Sicherheit und Trost. |
| 1 | Infant may not have a lot to do with stranger, especially if age appropriate stranger anxiety is paramount. | Das Kind hat eventuell nicht viel mit Fremden zu tun. Die Angst kann vor allem dann auftreten, wenn sie gerade altersbedingt besteht. |
| 2 | Infant is over-interested in stranger OR is overly cautious, but parent can mediate. | Das Kind ist übermäßig interessiert an Fremden ODER ist übermäßig vorsichtig, aber die Eltern können vermitteln. |
| 3 | Infant does not use parent as a mediator when faced with a stranger OR appears to be more interested in stranger than in parent. | Das Kind verwendet die Eltern nicht als Vermittler, wenn es mit einem Fremden konfrontiert ist ODER scheint mehr an Fremden als an den Eltern interessiert zu sein. |
| 4 | Infant appears to have no sense of boundaries with a stranger, over-relies on stranger to negotiate difficulties while seemingly ignoring the parent. | Das Kind scheint keine Grenzen gegenüber einem Fremden zu kennen. Es verlässt sich darauf, dass Schwierigkeiten von dem Fremden umgangen werden, während es die Eltern zu ignorieren scheint. |

Examples for

Parent - Infant Interaction

Eltern - Säuglings - Interaktion

| P-i 1 | Parent's initiation of physical contact | Von Eltern angebotener Körperkontakt |
|------------------|--|---|
| 0 | Parent initiates/allows contact with ease and pleasure, e.g. being touched and being playful with infant's body. Parent positions the infant so that s/he can make visual contact or can reach toys. Parent and infant mold easily into embrace. | Der Elternteil eröffnet / erlaubt Kontakt mit Leichtigkeit und Freude, z.B. wenn es berührt wird und mit dem Körper des Kindes spielerisch umgegangen wird. Der Elternteil positioniert das Kind so, dass es Blickkontakt herstellen oder Spielzeug erreichen kann. Das Elternteil und Kind umarmen sich mit Leichtigkeit. |
| 1 | There is some inflexibility in parent's physical contact. Parent is sometimes slow to make physical contact but responds appropriately after a while. | Der Elternteil wirkt etwas unflexibel im Körperkontakt. Zeitweise reagiert der Elternteil verlangsamt, jedoch nach einer Weile angemessen mit Körperkontakt. |
| 2 | Parent persistently holds infant awkwardly, away from parent's body or in a position that precludes physical contact. | Die Elternteil hält das Kind unbehoften vom eigenen Körper weg oder in einer Position, die Körperkontakt ausschließt. |
| 3 | Parent's use of physical contact is often without regard to infant's needs. Parent either ignores infants request for physical contact or uses physical contact for his/her own sake. For example parent pulls infant to her/him when distressed without regard to infants need. | Der Körperkontakt durch den Elternteil nimmt oft keine Rücksicht auf Bedürfnisse des Kindes. Der Elternteil ignoriert dabei zeitweise das Bedürfnisse des Kindes nach Körperkontakt oder benutzt diesen Kontakt aus eigenem Interesse. Zum Beispiel zieht der Elternteil das Kind zu sich heran, wenn er bekümmert ist ohne Rücksicht auf die Bedürfnisse des Kindes. |
| 4 | Parent disengages in a way that suggests physical proximity is undesirable or that infant's bodily needs are distasteful. Parent pushes infant away or rigidly prohibits physical contact and fails to keep infant physically safe. OR parent is intensely physically intrusive and constantly positions him/herself too close to infant, and pokes, grabs, pulls, or otherwise manipulates infant against infant's will. Parent handles infant as an inanimate object. Parent physically threatens infant, smacks, slaps, hits or hurts in any way. | Elternteil löst sich auf eine Weise, die dem Kind verdeutlicht, dass Körperkontakt unerwünscht ist ODER dass ihm die körperlichen Bedürfnisse des Kindes zuwider sind. Elternteil schiebt das Kind von sich weg oder verbietet streng den körperlichen Kontakt und hält das Kind körperlich nicht sicher. ODER: ein Elternteil ist körperlich intensiv aufdringlich und positioniert sich ständig zu nahe zum Kind und stößt, greift, zieht oder handhabt das Kind auf andere Weise gegen dessen Wunsch. Elternteil handhabt das Kind wie ein unbelebtes Objekt. Elternteil bedroht das Kind körperlich, stößt, ohrfeigt schlägt oder verletzt das Kind auf andere Weise. |

| P-i 2 | Parent's initiation of emotional contact | Emotionaler Kontakt der Eltern |
|------------------|---|---|
| 0 | Parent has capacity to reflect on own and infant's thoughts and feelings and emotional states. Parent is emotionally flexible and is able to follow his/her own infant's emotional cues. Parent soothes infant when distressed, shares in infant's joy and pleasure. Parent can initiate and maintain contact with infant in the face of his/her own preoccupation, or can catch their preoccupation before infant becomes distressed. | Elternteil ist in der Lage, sowohl über die eigenen Gedanken und Gefühle, als auch über die des Kindes zu reflektieren. Elternteil ist emotional flexibel und dazu in der Lage, den Signalen seines Kindes zu folgen. Elternteil beruhigt das Kind, wenn es verzweifelt ist und nimmt an der Freude und dem Vergnügen des Kindes Anteil. Elternteil kann den Kontakt zum Kind initiieren und aufrecht erhalten trotz der eigenen Beschäftigung, oder kann seine eigene Tätigkeit beenden bevor das Kind beunruhigt ist. |
| 1 | Parent sometimes does not use emotional language, whether verbal or nonverbal, in relation to self and/or infant but shows some capacity for reflective functioning in relation to self and infant. Parent might mismatch infant's affect at times, jollying infant along rather than picking up on the affect and modulating it, or continuing to play or tease, but sufficient repair takes place. When preoccupied parent can catch their preoccupation before infant becomes distressed. | Manchmal benutzt der Elternteil weder verbal noch nonverbal eine emotionale Sprache im Bezug auf sich selbst und/oder das Kind, aber er zeigt eine gewisse Fähigkeit zur Reflexion in Bezug auf sich selbst und das Kind. Elternteil könnte die Gefühle des Kindes manchmal falsch verstehen, somit das Kind eher bei Laune halten, statt dessen Gefühle aufzugreifen und zu modulieren oder er könnte das Spiel fortsetzen oder necken. Aber es findet hinreichende Wiedergutmachung statt, wenn der beschäftigte Elternteil seine eigene Ablenkung bemerkt, bevor das Kind zu verzweifelt ist. |
| 2 | Parent consistently does not use emotional language, whether verbal or nonverbal, in relation to self and/or infant. Parent has limited capacity for reflective functioning in relation to self and infant. Parent often mismatches infant's affect, jollying infant along rather than picking up on the affect and modulating it, or continuing to play or tease, or demand a response after infant has withdrawn. Parent loses track of infant in the face of their preoccupation, even when infant becomes distressed. | Elternteil benutzt konsequent keine emotionale Sprache, sei es verbal oder nonverbal, im Bezug auf sich selbst und/oder das Kind. Elternteil hat nur begrenzt die Fähigkeit zur Reflexion in Bezug auf sich selbst und das Kind. Elternteil missversteht häufig die Affekte des Kindes und bespaßt das Kind eher, als die Affekte aufzugreifen und zu modulieren, oder spielt und neckt weiter oder verlangt Antwort, nachdem sich das Kind bereits zurückgezogen hat. Elternteil verliert angesichts seiner eigenen Vertieftheit den Überblick zum Zugang des Kindes, selbst wenn das Kind seine Verzweiflung zeigt. |
| 3 | Parent sometimes belittles infant's distress or refuses to acknowledge negative feelings. Parent often emotionally overwhelms infant; for example, ignores infant's cues and continues to escalate excitement after infant has signaled wish to stop. Parent leaves infant without appropriate stimulation, ignores cues to be picked up, does not respond to cries or vocalizations, lacks affective warmth and responsiveness. | Elternteil verharmlost manchmal die kindliche Not oder weigert sich, dessen negative Gefühle anzuerkennen. Elternteil überwältigt das Kind häufig emotional; z. B. Ignoriert er die Hinweise des Kindes und versetzt es weiter in Aufregung, obwohl das Kind signalisiert, dass es aufhören will. Elternteil lässt das Kind ohne angemessene Anregung, ignoriert den Wunsch, auf den Arm genommen zu werden, antwortet nicht auf Weinen oder andere Lautäußerungen. Es fehlt affektive Wärme und Resonanz. |

| | | |
|---|---|--|
| 4 | Parent's emotional language pervasively mismatches infant's experience. Parent laughs in response to infant's cries and consistently belittles infant's distress or refuses to acknowledge negative feelings. Parent either emotionally overwhelms infant or is very detached emotionally from infant. Parent uses infant for own emotional needs at the expense of the infant's own experience of her/himself. Parent gives no indication of reflective functioning in relation to infant. | Die emotionale Sprache des Elternteils verharmlost häufig das Erleben des Kindes. Elternteil lacht als Antwort auf das Weinen des Kindes und verniedlicht ständig die Verzweiflung des Kindes oder weigert sich, negative Gefühle anzuerkennen. Elternteil überwältigt entweder das Kind emotional oder ist emotional unbeteiligt. Elternteil verwendet das Kind zur Stillung eigener emotionaler Bedürfnisse, auf Kosten des Selbsterlebens des Kindes. Elternteil zeigt keine Anzeichen von reflektierender Fähigkeit im Bezug auf das Kind. |
|---|---|--|

| P-i 3 | Parent's playfulness in relation to infant | Spielerische Fähigkeit des Elternteils |
|------------------|---|--|
| 0 | Parent plays with infant and enjoys infant's playfulness. Parent actively engages with infant either through games such as singing, 'conversation,' verbal or non-verbal turn-taking, or joint attention to toys or other aspects of the environment. | Elternteil spielt mit dem Kind und genießt die Verspieltheit des Kindes. Elternteil beschäftigt sich aktiv mit dem Kind im Spiel entweder durch Singen, Gespräche wie BabyTalk, verbale oder nonverbale Konversation oder macht das Kind aufmerksam auf Spielzeuge oder andere Aspekte der Umgebung. |
| 1 | Parent sometimes finds it difficult to follow the infant's lead in play, but there are playful interactions. | Elternteil findet es manchmal schwierig, dem Kind die Führung im Spiel zu überlassen, aber es gibt spielerische Interaktionen. |
| 2 | Parent's own feelings may define perception of infant's playfulness, for example, parent sometimes construes as naughtiness infant's pleasure in exploration. Parent may use toy to disengage from infant e.g. "you play with it on your own". | Die eigenen Gefühle des Elternteils könnten als Wahrnehmung des Spieltriebes des Kindes verstanden werden z. B: der Elternteil könnte manchmal die kindliche Entdeckungsfreude als Ungezogenheit deuten. Elternteil könnte das Spielzeug nutzen, als ob es ihm gehöre. |
| 3 | Parent does not play with infant where play might be expected. Parent does not convey pleasure in play. Parent finds infant's play worrying or troublesome and would prefer infant to sit still or keep quiet. OR parent initiates or responds to play intrusively without necessarily following infant's lead or leaving sufficient space for infant's creativity. | Elternteil spielt nicht mit dem Kind, wenn man es erwarten könnte. Elternteil drückt keine Freude am Spielen aus. Elternteil findet das Spiel des Kindes beunruhigend oder lästig und würde es bevorzugen, wenn das Kind ruhig sitzt oder Ruhe gibt. ODER Elternteil initiiert oder antwortet auf das Spiel aufdringlich ohne der Führung des Kindes hinreichend zu folgen oder genug Raum für die kindliche Kreativität zu lassen. |
| 4 | Parent repetitively intrudes upon infant's play to the exclusion of infant. Parent takes over the play as if parent's need is greater than infant's. Parent appears to join in play but in such a way that infant is thwarted. OR parent persistently defines infant's play negatively; for example, parent perceives infant as hostile or deliberately destructive when playing. Parent prohibits infant's play. | Elternteil unterbricht wiederholt das Spiel des Kindes und schließt das Kind aus dem Spiel aus. Elternteil übernimmt das Spiel, als wäre es für ihn von größerer Notwendigkeit als für das Kind. Elternteil scheint beim Spiel mitzumachen, aber in einer Weise, die das Spiel des Kindes vereitelt. ODER Elternteil definiert das Spiel fortwährend negativ; z.B.: Elternteil nimmt Kind als feindselig oder absichtlich destruktiv im Spiel wahr. Elternteil verbietet das Spiel des Kindes. |

Appendix 7

PIRAT and PIRAT Global Scales Reliability Training Infant Development from Birth to Two

Infant Development from Birth to Two

The overview of the infant's development from 0 – 2 years was comprised by the present author from several resources, mainly the second edition of Brazelton's book 'Touchpoints' (Brazelton, 2006), Zero To Three (2008) and several papers on synchrony, attunement, and development (Feldman, 2007; Tronick & Beeghley, 2011; Sroufe, 2009).

0 - 3 Months

Throughout the first 3 months the baby is learning to feel comfortable and safe in the world. Parents and other attachment figures support the formation of a trusting bond between them and the baby by responding reliably to their signals and providing love and comfort.

Motor Skills Babies explore how to use their body to make things happen. It could occur that they grip a finger or an object put in their hand. To show that they are hungry, an appropriate move of their head toward their mother's breast or the bottle could be observed. In these situations, they are learning to trust their attachment figures, if these respond to their signals. They are getting to know their closest people and recognize different sensations like faces, voices, and smells. At early stages of their development, most babies can control their limbs and their reflexes up to a certain degree. Moreover, they are able to lie on their back whilst cycling their arms and legs. Now they also start to turn the head to a preferred side.

Communication Furthermore they respond with pleasure to a caregiver's smile and touch. Babies in that age also begin to learn how to express what they need, using sounds, facial expressions, and body movements. They also start to show when they are in the mood to play or need a break. Typically, babies watch their parent's face for a longer time with increasing interest, often until they break into a smile.

3 - 6 Months

By the fourth months parents and baby have formed a close bond of affections and they get into the feeling that they are a family. This new-gained structure defines the parents' role.

Motor Skills At the age of about 3 to 6 months the baby is experiencing how to control his body and his movements. It can also be observed that the baby wants to explore objects by touching them with fingers, hands, and mouth, e.g. transferring them from one hand to the other. The baby may for example start to rock back and forth on his hands and knees to move and explore. On the basis of those movements the baby prepares to crawl at

about 9 months. Now and then the baby starts to push himself up and try to sit and hold his head steady. To hold balance, he typically makes use of his hands while sitting. Finally, these efforts will lead later to the competence of getting upright and holding a standing position.

Communication In the span from three to six months, babies are responding more actively to parents and caregivers. While around 2 or 3 months, they use their voices primarily to laugh and squeal and are learning first sequences of conversation, from the 3 to 4 months on, babies will typically stay quiet while someone else is talking, wait for silence to make sounds and then wait for response. At the age of about 4 months cooing and babbling becomes very typical. With those new earned tools of communication, babies find themselves able to cause reactions from other persons in their environment, e.g. by crying purposefully. Therefore, the baby experiences causality - when he acts, something predictable can happen. Apart from this communicative competences they are also starting to eat and sleep more regularly. This results from the fact that they are getting used to the world around them and develop daily routines.

6 - 9 Months

At the age of 6 of 9 months babies explore their surroundings more and more intensively. Hand in hand with that goes their increasing ability to control their body.

Motor Skills Crawling to get around and even pull up on furniture to stand becomes less difficult for them and helps them to explore the world from new perspectives and with an extended radius, which leads to more independence in their actions. Just as well they are picking up small things like toys with their fingers and sit on their own, maintaining a straight back. They begin to understand that they can cause events and be operative. On this basis, they learn to think and solve problems. They are more and more interested in getting how things work by imitating what they see others do.

Communication They are intensifying their communication using their voices and their bodies. They understand the word 'no' and show themselves capable of setting together syllables with a consonant and a vowel. Once they have discovered this way of communication, they keep practicing it a lot. Another important aspect is their personality starting to show. They reveal preferences like sound and activity, meeting other people or more quiet and calm things, needing time to feel comfortable with a strange person.

9 - 12 Months

A real milestone for the baby is the growing experience that things still exist even though he can't see them. By repeating actions again and again, he practices and figures out how things work. This also builds his memory. Additionally, symbol use and symbolic play becomes more and more important and there are sequential links between parent elaboration of child symbolic acts and symbolic complexity. With the end of the first year of life, a baby becomes a toddler.

Motor Skills On the physical level, the baby further develops his abilities to creep and crawl. In addition to that, he starts to stand and to walk a few steps holding on to furniture or another one's hand what gradually leads to walking on his own, followed by standing on one's own. The baby will often try to pull himself up and stand as long as he can, as standing puts the world into a new perspective.

Communication Near the end of the first year of life, the babies' communicative skills improve significantly. He is able to use movements and sounds purposeful to make others know what he wants and needs, and even say one or two words. Although he may not yet understand the meanings, the baby will try out new sounds, like 'mama' and explore further sounds. By that the base for future language skills is proceeding. Apart from expressing things he understands even more words than it is able to say. He can show that he knows what a person is saying or asking by doing what is asked for or by refusing to do it.

12-15 Months

Along with the progress on a motoric and on the verbal level, 1-year-olds explore the world in ways that are new to them and they are eager to do things self-reliantly. On a personal level the baby learns to say 'no' and to show that it wants to do things on his own. By now, most children are feeding themselves, and this new capacity of deciding what he wants or doesn't want is often expressed in picky eating behaviours.

Motor Skills They start already to walk by holding other person's hands and in some cases even on their own. By the time the toddler gets used to walking and gets control over his balance and his feet will become more and more parallel. The more he practices the better he will be able to do other things while walking. Although they are learning to crawl up stairs they are mostly not able to come down yet. They keep on imitating other people's actions and learn how the world works.

Communication The mutual influence between parents' and infant's affective behaviours increases and they focus on joint exploration of objects. Verbally, he increasingly

tries to talk using more and more words, reactions to questions or requests are clearly observable and the ability to understand grows a lot. If the toddler is asked for it, he can point to a body part or a location in his surroundings. The continuing practice of words and construction of phrases is preparing himself for speech.

15 - 18 Months

In the middle of their second year of age, problem-solving competences develop intensively. By using skills on the physical, cognitive, and verbal level, toddlers systematically try to make plans to reach their goals. Beneath the experiences they make by using objects the way they are supposed to be used to or doing something repeatedly, it is very helpful for them to recap their past experiences, e.g. to understand new situations. Another important tool of problem solving is imitating what people do. This is particularly valid for facing challenges by showing power of endurance and staying calm. The new gained competences support the babies' exploring and learning behaviour.

Motor Skills Self-reliantly they use their body to get to know their surrounding better and keep exploring new environments.

Communication Based on all these skills they begin to understand their own as well as other persons' feelings. Toddlers show first evidence of the process of mentalizing, which leads into the future formation of the Theory of Mind, "an interconnected set of beliefs and desires, attributed to explain a person's behaviour" (Fonagy, Gergely, Jurist, & Target, 2002, p. 26). This changes the world for the toddler and others, as he may for example try to care for others by comforting them if they seem sad or repeatedly make sounds and actions that make people laugh. They are able to use their improving language-capacity, and can understand simple questions and directions and to communicate by combining sounds and actions more and more differentiated. Around the age of 18 months, they may say up to 20 words. Typically, the young toddler imitates play patterns and sequences of toy play from peers, not only directly but also via peripheral visions, when he does not watch the other one playing.

18 - 24 Months

By 18-24 months, talking and learning how to self-control as well as the beginning use of imagination are important skills that can be observed in the toddler's behaviour. Despite a huge ability to understand things verbally, self-control is not yet completely developed and particularly to stop himself from doing something is a challenge.

Motor Skills The toddler is more frequently testing things out in a very systematic way. This can be by moving things to see how they work, as well as starting to sort objects. In the course of exploration, toddlers are also beginning to use their imagination. They may for example feed their dolls pretending to give them food or make the appropriate noises when playing with toys. In addition the well-developed walking skills lead to more complex forms of moving like dancing, jumping and balancing, climbing into everything and exploring rooms.

Communication The competence of talking is one of the most important achievements of the first two years of life. The exact age when toddlers speak is different from child to child. In most cases, toddlers are learning new words every day, so that they may be able to say up to 50 to 100 words by their second birthday. In addition they may even start to build small sentences by putting 2 words together.

Appendix 8

PIRAT and PIRAT Global Scales Reliability Training Confidentiality Agreement

Confidentiality Agreement for PIRAT coders

I understand that in having access to the Anna Freud Centre's video data of the PIP RCT Study/PIRAT Validation Study I am completely responsible for safeguarding the information that I am working with. This means that I will not discuss any of the confidential information disclosed to me with anyone, under any circumstances. I will not make copies of or share any confidential material from the Centre. I will ensure that all confidential data will be securely saved on a password protected HD drive, securely locked away when not in use and that confidential video material will not be viewed in public, and that all data will be returned to the Anna Freud Centre when the work is complete.

Should I come across personal information relating to somebody whom I know or would be likely to have dealings with, I will avoid reading or viewing it, and will inform my Anna Freud Centre contact of the connection.

I realise that these restrictions are essential to protect the privacy of patients and research participants of the PIP RCT Study/PIRAT Validation Study who have trusted the Centre to do this, and that the restrictions continue even after I have completed my work here at the Centre for the PIRAT Validation Study.

Print Name:

Signature:

Date:

Confidentiality Agreement for Parent-Infant Relational Assessment Tool (PIRAT) reliability training

Congratulations on passing the PIRAT reliability training.

We will shortly be distributing your PIRAT reliability training certificate. Before doing so, we require you to sign and return this confidentiality agreement back to

Only once PIRAT reliability signed confidentiality agreements are received from individual participants will their certificates be released.

I understand that having completed PIRAT reliability training and passed the PIRAT reliability training test, I am authorised to utilise the Parent-Infant Relational Assessment Tool (PIRAT) for clinical work and research purposes.

I understand that I am completely responsible for safeguarding the information that I have had access to by attending the PIRAT training and completing the PIRAT reliability test.

This includes (but is not limited to):

- PIRAT manual
- PIRAT coding sheet
- Parent-Infant videoed interactions
- PIRAT course material (presentation, training notes)

I understand that I am not authorised to share, copy or circulate printed or digital files of any of the above without written permission of Dr. Carol Broughton.

Any copies of videotaped mother-infant interactions belong to the Anna Freud Centre. Trying to copy video clips for reliability training to any HDD, USB or computer, uploading it to any internet based storage platform or to any server and discussing details of a DVD outside of the training setting are considered a breach of confidentiality.

Any records made during the PIRAT reliability training concerning the videoed Parent-Infant interactions and PIRAT coding are also considered confidential material and must be safeguarded.

I also understand that passing the PIRAT reliability test accredits me as a reliable PIRAT coder. However, it does not authorise me to train anyone else in employing the PIRAT coding system.

I understand that these restrictions are essential to protect the privacy of research participants and the Parent-Infant Relational Assessment Tool (PIRAT) copyright.



Anna Freud
Centre

I confirm that I have read and approved the PIRAT reliability confidentiality agreement.

Print Name:

Signature:Date:

Confidentiality Agreement for the Parent-Infant Relational Assessment Tool PIRAT Global Scales training

I understand that this training course will involve the use of a copyright protected manual of the Parent-Infant Relational Assessment Tool (PIRAT) which I am not allowed to copy or distribute without written permission of Dr. Carol Broughton, Susanne Hommel, Ph.D. candidate and the Anna Freud Centre and I understand that this course will involve the use of videotaped and accompanying case material of a confidential nature. I understand that in having access to the PIRAT Global Scales manual, videotaped mother-infant interactions and case material, I am completely responsible for safeguarding the information that I have access to.

This means that I will not discuss any of the confidential information disclosed in the videos and the case material with anyone outside of the Anna Freud Centre, under any circumstances. I will not copy or distribute any of this material or any confidential material given to me as part of the training process.

All rules of confidentiality apply to the video clips and the PIRAT Global Scales Manual, Coding Sheet and Addendum for Coding and paper copies of training handout and copyrighted book chapters or scientific papers. Any records made during the training about the videos are also considered confidential material and must be treated as such.

I understand that these restrictions are essential to protect the privacy of research participants and of the research project, principal investigator Susanne Hommel, Ph.D. candidate. I confirm that I have read and approve the confidentiality agreement and that I have understood that any violation of this confidentiality agreement might have legal consequences.

Print Name:

Signature:Date:

For PIRAT Global Scales Reliability Training:

I understand that the copy of the PIRAT Global Scales Manual, Coding Sheet and Addendum for Coding is for my personal use and may not be photocopied or distributed without written permission of Dr. Carol Broughton, Susanne Hommel, Ph.D. candidate and the Anna Freud Centre. Any copies of videotaped mother-infant interactions belong to the Anna Freud Centre. They will be provided on a secure server and will be password protected. All passwords will have a time-limit assigned to them and will become invalid after an agreed period of time. I understand that I must not under any circumstances give the password to anybody else prior to, during or after the reliability training.



All rules of confidentiality apply to the video clips. Any records made during reliability training about the videos and PIRAT Global Scales coding are also considered confidential material and must be treated as such. The video clips should only be viewed by the training participant in private and should not be shown to any unauthorized persons. The videos are entrusted to me for the sole purpose of taking the reliability exam for a certain period of time until first reliability check and the reliability exam. Coding sheets and note sheets for each case must be sent via e-mail (pdf-scans) to Susanne Hommel at sh@susannehommel.de or via mail to Dr. Carol Broughton, Anna Freud Centre, 12 Maresfield Gardens, NW3 5SU, London. The reliability data and certificate will then be returned.

All records of the reliability training notes and coding sheets and video access passwords must be deleted after completing the reliability training. I understand that I am completely responsible for safeguarding the information that I am having access to and working with during reliability training. Trying to copy video clips for reliability training to any HDD, USB or computer, uploading it to any internet based storage platform or to any server and discussing details of a DVD outside of the training setting are considered a breach of confidentiality.

Once you pass the PIRAT reliability assessment you have the right to say that you are a reliable PIRAT coder but this does not involve the opportunity to train colleagues or offer PIRAT trainings yourself. Simply attending the PIRAT training course does not confer competence of any kind in employing the PIRAT Coding System.

I understand the above policy and agree to abide by the conditions of this policy.

Print Name:

Signature: Date:

Appendix 9

Ethical Approval for PIRAT Global Scales



Dear Susanne,

I hereby confirm the use of data from the Parent-Infant Psychotherapy Randomized Controlled Trial (PIP RCT) at the Anna Freud Centre for your PhD project about the validation and reliability testing of the Parent-Infant Relational Assessment Tool (PIRAT).

The coding of PIP RCT video clips of mother-infant interactions with PIRAT has been approved according to the regulations of our ethics committee.

Best wishes,



Professor Peter Fonagy, PhD, DipPsy, FBPSA, FBA, FMedSci, OBE
Director, UCLPartners Mental Health and Wellbeing Programme
National Clinical Advisor, CYP-IAPT
Head of the Research Department of Clinical, Educational and Health Psychology
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Ethics committee approval – PIRAT Global Scales coding of PIP RCT data

Please see email exchange below between Dr. Michelle Sleed, PhD (Senior Research Psychologist, Anna Freud Centre) and Joan Brown, REC Manager, NRES Committee London – Camden & Islington, Health Research Authority, National Research Ethics Service (NRES):

Email confirmation to Susanne Hommel, Dipl. Psych., cand. PhD., Principal Investigator PIRAT Global Scales reliability and validity project, Anna Freud Centre and University College London:

12. September 2013
FW: 05-Q0511-47

Hi Susanne
See below. Our ethics committee has approved the coding of the videos on the PIRAT.
All the best,
Michelle

Michelle Sleed
Senior Research Psychologist

Direct Line +44 (0)20 7443 2216

From: CamdenandIslington NRESCommittee.London- (HEALTH RESEARCH AUTHORITY) [mailto:nrescommittee.london-camdenandislington@nhs.net] **Sent:** 11 September 2013 16:45 **To:** Michelle Sleed **Subject:** RE: 05-Q0511-47

Dear Michelle

The Chair has reviewed the documents you sent together with a copy of the original favourable opinion letter and she agrees that the ethical approval does cover the coding for videotaping the research.

Kind regards
Joan

Joan Brown
REC Manager
NRES Committee London – Camden & Islington
Health Research Authority
National Research Ethics Service (NRES)
Telephone: Direct Line 0191 428 3566 Fax: 0191 428 3432
Office Address: TEDCO Business Centre - Room 002, Rolling Mill Road
Jarrow, NE32 3DT
Email: nrescommittee.london.camdenandislington@nhs.net www.hra.nhs.uk www.nres.nhs.uk

If your email is regarding a formal request for information under the Freedom of Information Act, please resend to HRA.FOI@nhs.net to ensure it is dealt with promptly.

From: Michelle Slead [mailto:Michelle.Slead@annafreud.org] **Sent:** 06 September 2013 13:33 **To:** CamdenandIslington NRESCCommittee.London- (HEALTH RESEARCH AUTHORITY) **Subject:** RE: 05-Q0511-47

Dear Joan,

Thank you so much for your reply and for looking into this.

We were delayed in getting our data coded and analysed following the end of data collection. We were told by our REC contact at that time to submit a report based on the data that we had been able to analyse, and that is what the final report has been based upon. However, as you will see in the study protocol, we had always intended to analyse the video- recorded parent-infant interactions and this has been stated at the end of our final report (also attached).

We are therefore still at the point of coding and analysing the parent-infant interaction data, which is what we need to confirm that we still have ethical approval to do.

I have attached all of the relevant documents, and look forward to your response once you have been able to look into it.

Many thanks for your time.

Kind regards,
Michelle

Michelle Slead
Senior Research Psychologist

Direct Line +44 (0)20 7443 2216

Appendix 10

Ethical Approval for PIP RCT



Health Research Authority
NRES Committee London - Camden & Islington

North East REC Office
Room 002
TEDCO Business Centre
Rolling Mill Road
Jarrow
Tyne & Wear
NE32 3DT

Tel: 0191 428 3561

26 April 2013

Prof Peter Fonagy
Chief Executive, Anna Freud Centre; Professor of Psychoanalysis, UCL
Anna Freud Centre & University College London
21 Maresfield Gardens
London
NW3 5SD

Dear Prof Fonagy

Study title: Helping parents with mental health problems to parent young infants: A randomised controlled trial of Parent-Infant Psychotherapy (PIP) and Counselling
REC reference: 05/Q0511/47
IRAS project ID:

Thank you for sending the summary of the final research report for the above study dated 25 April 2013. The report will be reviewed by the Chair of the Research Ethics Committee, and I will let you know if any further information is requested.

| | |
|---------------------|---|
| 05/Q0511/47: | Please quote this number on all correspondence |
|---------------------|---|

Yours sincerely



Kerry Dunbar
Assistant Committee Co-ordinator

E-mail:

Camden & Islington Community Local Research Ethics Committee

Room 3/14
Third Floor, West Wing
St Pancras Hospital
4 St Pancras Way
London
NW1 0PE

25 May 2005

Prof Peter Fonagy
Chief Executive
Anna Freud Centre & University College London
21 Maresfield Gardens
London
NW3 5SD

Dear Prof Fonagy

Full title of study: *Helping parents with mental health problems to parent young infants: A randomised controlled trial of Parent-Infant Psychotherapy (PIP)*

REC reference number: 05/Q0511/47

Protocol number:

Thank you for your letter of 13 May 2005, responding to the Committee's request for further information on the above research and submitting revised documentation.

The further information has been considered on behalf of the Committee by the Chair and Ms Gillian Miles.

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.

The favourable opinion applies to the research sites listed on the attached form.

Conditions of approval

The favourable opinion is given provided that you comply with the conditions set out in the attached document. You are advised to study the conditions carefully.

Approved documents

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

| Document Type: | Version: | Dated: | Date Received: |
|-----------------------|-----------------|---------------|-----------------------|
| Application | 1 | 23/02/2005 | 25/02/2005 |
| Investigator CV | 1 | 23/02/2005 | 22/03/2005 |
| Protocol | 1 | 23/02/2005 | 25/02/2005 |
| Covering Letter | 1 | 23/02/2005 | 25/02/2005 |
| Summary/Synopsis | 2 | 13/05/2005 | 17/05/2005 |
| Compensation | 1 | 20/07/2004 | 25/02/2005 |

| | | | |
|---|------------------------------------|------------|------------|
| Arrangements | | | |
| Interview Schedules/Topic Guides | 1 - Family Background Interview | 23/02/2005 | 25/02/2005 |
| Interview Schedules/Topic Guides | 1 The Therapy Experience Interview | 23/02/2005 | 22/03/2005 |
| Copy of Questionnaire | Social Support Questionnaire | | 22/03/2005 |
| Copy of Questionnaire | GHQ-28 | | 22/03/2005 |
| Copy of Questionnaire | Pearlin and Schooler Mastery Scale | | 22/03/2005 |
| Copy of Questionnaire | Appendix N CES-D | | 22/03/2005 |
| Copy of Questionnaire | BSI 18 | | 22/03/2005 |
| Copy of Questionnaire | BSI | | 22/03/2005 |
| Copy of Questionnaire | PSI | | 22/03/2005 |
| Copy of Questionnaire | 1 - Child Health Record Review | 23/02/2005 | 25/02/2005 |
| GP/Consultant Information Sheets | 1 | 18/02/2005 | 25/02/2005 |
| Participant Information Sheet | 2 | 13/05/2005 | 17/05/2005 |
| Participant Consent Form | 2 | 13/05/2005 | 17/05/2005 |
| Response to Request for Further Information | | 13/05/2005 | 17/05/2005 |
| Referrer Information Sheet | 2 | 13/05/2005 | 17/05/2005 |
| Inclusion/Exclusion | 2 | 13/05/2005 | 17/05/2005 |
| Referral Consent Form | 1 | 23/02/2005 | 25/03/2005 |
| GP letter | 1 | 23/02/2005 | 22/03/2005 |
| Grant Offer Letter | | 20/07/2004 | 23/03/2005 |

Management approval

The study should not commence at any NHS site until the local Principal Investigator has obtained final management approval from the R&D Department for the relevant NHS care organisation.

Membership of the Committee

The members of the Ethics Committee who were present at the meeting are listed on the attached sheet.

Notification of other bodies

The Committee Administrator will notify the research that the study has a favourable ethical opinion.

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.

| |
|-------------|
| 05/Q0511/47 |
|-------------|

| |
|--|
| Please quote this number on all correspondence |
|--|

With the Committee's best wishes for the success of this project,

Yours sincerely,

Stephanie Ellis
Chair

E-mail:

Enclosures *Standard approval conditions*

Site approval form (SF1)

Camden & Islington Community Local Research Ethics Committee

LIST OF SITES WITH A FAVOURABLE ETHICAL OPINION

For all studies requiring site-specific assessment, this form is issued by the main REC to the Chief Investigator and sponsor with the favourable opinion letter and following subsequent notifications from site assessors. For issue 2 onwards, all sites with a favourable opinion are listed, adding the new sites approved.

| | | | | | |
|---|---|----------------------|---|-----------------------|-------------|
| REC reference number: | 05/Q0511/47 | Issue number: | 1 | Date of issue: | 25 May 2005 |
| Chief Investigator: | Prof Peter Fonagy | | | | |
| Full title of study: | Helping parents with mental health problems to parent young infants: A randomised controlled trial of Parent-Infant Psychotherapy (PIP) and Counselling | | | | |
| <p><i>This study was given a favourable ethical opinion by Camden & Islington Community Local Research Ethics Committee on 25 May 2005. The favourable opinion is extended to each of the sites listed below. The research may commence at each NHS site when management approval from the relevant NHS care organisation has been confirmed.</i></p> | | | | | |

| Principal Investigator | Post | Research site | Site assessor | Date of favourable opinion for this site | Notes ⁽¹⁾ |
|--|------|--|---|--|----------------------|
| Professor Peter Fonagy | | Children and Families Directorate, City & Hackney Teaching Primary Care Trust. | East London & The City HA Local Research Ethics Committee 2 | 25/05/2005 | |
| <p>Approved by the Chair on behalf of the REC:</p> <p>..... (Signature of Chair/Administrator*)</p> <p>(*delete as applicable)</p> <p>..... (Name)</p> | | | | | |

⁽¹⁾ The notes column may be used by the main REC to record the early closure or withdrawal of a site (where notified by the Chief Investigator or sponsor), the suspension of termination of the favourable opinion for an individual site, or any other relevant development. The date should be recorded.

Appendix 11

PIP RCT Participant Information Sheet and Consent Form

Patient Identification Number:

CONSENT FORM

A study of psychological help for mothers with young babies

Name of Researchers: Peter Fonagy, Mary Target, Michelle Slead

Please initial box

1. I confirm that I have read and understand the information sheet dated 11/2008 (version 5) for the above study and have had the opportunity to ask questions.
2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason, without my medical care or legal rights being affected.
3. I understand that I will be videotaped with my baby as part of the research.
4. I agree for myself and my baby to take part in the above study.
5. I agree for the video of play with my baby to be used for teaching professionals about baby development and behaviour (optional).

Name of Parent

Date

Signature

Name of child

Researcher taking consent

Date

Signature

1 for patient; 1 for researcher; 1 for referring professional

Participant Information Sheet

A study of psychological help for mothers with young babies

You are being invited to take part in a research study. This information sheet is to answer some of your questions and to help you decide if you want to take part.

1. What is the purpose of the study and why have I been chosen?

We understand that you and your doctor/ health visitor/ or other professional have spoken about some concerns about how you are feeling, or how your baby is doing. This study will compare a service called parent-infant psychotherapy with the services that are normally offered in your area. Parent-infant psychotherapy is a psychological service for mothers and babies together. We would like to see how well it works compared to the services that are usually available. This study will help us to find out in what ways these different services will benefit different families.

2. Do I have to take part?

No, it is up to you to decide whether or not to take part. If you decide to take part you are still free to change your mind at any time and without giving a reason. A decision to pull out of the study at any time will not affect the standard of care you receive. If you would like to receive treatment but not take part in the study, the person who has referred you (such as your GP or health visitor) can discuss the treatment options with you.

3. What will I have to do if I take part?

If you decide to take part in the study, a researcher will see you and your baby together. This can be done either at the place where you were referred from, at the Anna Freud Centre, or in your home, whichever you prefer. During these interviews, you will be asked some questions about how you think you and your baby are doing and you will complete some questionnaires with the researcher.

Sometimes we might find out from this first interview that the study is not quite right for some mothers and babies. If this happens, the researcher will discuss this with you and you will not be included in the study. If you do still wish to receive some kind of help, you can discuss other options with the person who referred you to the study.

If you the study is suitable for you and it's something you are interested in doing, you will either receive parent-infant psychotherapy or you will receive what we call "treatment as usual". If you are placed in the "treatment as usual" group, you will continue to receive the care/treatment you have from your GP, health visitor, mental health team, psychiatrist, etc. If you are in the "parent-infant psychotherapy group", you will be offered appointments with a parent-infant psychotherapist in addition to the services you already use.

Because we don't know which of the two types of treatment is better for which people, we need to place people to both types of treatment and then compare the groups. The type of treatment group you are placed in will be done by a computer and you have a 50:50 chance of being in either group. You will not be able to choose which treatment group you go to. Once you have been placed in one of the two groups, the research psychologist will let you know which one you will be receiving.

By taking part in the study you and your child will be seen by a researcher 3 times in one year. The researcher will complete a set of questionnaires with you about how you are feeling, what it's like for you to be a parent, and about your experience of services you have used. We will also do a simple assessment of your baby's development by playing some games with him or her, and we will video-record you and your baby spending time together for a little while. At the 6-month follow-up, we will also ask if you are willing for your baby to take part in a study of infant brain development. During this we will record tiny electrical signals of your baby's brain using sensors on your baby's scalp. The sensor net doesn't produce any electricity, it only measures the electrical impulses your baby's brain naturally creates. The procedure is non-invasive and won't harm your baby in any way. For your baby it will be the same feeling as wearing a hat. This is voluntary and will be up to you to whether or not you would like your baby to take part. At the 12 month follow-up we will ask you and your child if you would be willing to do an experiment which involves you and your child being together and then separating for short time periods so that we can see how these separations are for your child. This is voluntary and it will be up to you if you would like to do it or not. These research assessments will probably take between one-and-a-half to two-and-a-half hours at each time point.

4. Will it be difficult to do?

Parents usually find the questionnaires quite interesting, and talking over their relationship with their baby is often enjoyable or helpful. Finding that problems have improved in later assessments is good to know. The babies enjoy the simple tests (which are like the ones doctors use in Well Baby Clinic checks), and their parents enjoy seeing what their baby can already do.

5. What are the possible disadvantages and risks of taking part?

Sometimes the questionnaires and interviews used in this study can be a bit upsetting because they include asking about any problems you are having. However, this would probably be no more difficult than when you discussed the same things with your doctor or health visitor. It does take some time (about two hours at three different time points), and that might be difficult if you are very busy.

6. What are the possible benefits of taking part?

The study gives you the chance to be offered help with any problems you have for yourself and your baby. Both parent-infant psychotherapy and the community services that are normally offered have been very helpful for many parents and children. Also, the information we get from this study will help us in the future to provide the best services to other families with young children experiencing difficulties. So if you take part you will know that you are making a difference for others like you.

7. What if something goes wrong?

If you are not happy with anything about the research or if you want to talk to somebody about the study, you may contact any of the people listed at the end of this information sheet.

8. Will my taking part in this study be kept confidential?

The information you give will be kept very private. We make sure of this by keeping the questionnaires and videotapes locked away, and we will not write your name or any other personal details on any of these. All personal information you give us will be remain locked away. When we report the results of the study, we will not include any personal details about any of the families that took part so that they can be recognised. Only the research staff will be able to look at the information you give us. Your General Practitioner will be sent a letter saying that you have agreed to take part in the study and which treatment group you have been put in. However, your doctor and practice staff will not need to be told about your assessments or what is discussed in the therapy, except in very rare cases if there is serious risk to you or your baby, which is not already known to your doctor. If that happened, of course we would talk to you about this as well as to your doctor.

9. Who is organising and funding the research?

This study is being conducted by the Anna Freud Centre and has been funded by the Big Lottery Fund. The study has been approved by a local research ethics committee.

10. **Contact for Further Information**

If you would like further information about the study, you can contact the Research Psychologist:

Michelle Sleed
Anna Freud Centre
21 Maresfield Gardens
NW3 5SD

Or you could contact the Chief Investigator of the study:

Prof Peter Fonagy
Anna Freud Centre
21 Maresfield Gardens
NW3 5SD

Thank you for your time.

Appendix 12

Research Funding

15 March 2011

Mary Target
12 Maresfield Gardens
London

Dear Sir or Madam,

I am happy to inform you that the Evaluation of Research Proposals and Results Subcommittee (CERP) of the IPA has approved your grant application and awarded \$4080 to support your research project. Due to the large number of approved applications that approximately double the funds available, and in order to fund as many as possible, we reduced each award by approximately half. The comments of the designated referees are included for the help they may provide you in carrying out your research program. The funds will be sent from the IPA office in London to the designated Responsible Authority in due course.

The document "General Conditions Covering IPA CERP Grants" is also attached. Can I please draw your attention to paragraphs 16 to 19 on reports? When the research project is completed, two reports are due, both to me at jschachter2@nyc.rr.com. The first report should be from yourself as the "Principle Authority" on the scientific work accomplished. You should also obtain and present the second report from the "Responsible Authority" confirming the proper disbursement of the funds. Details required in the reports are included in the general conditions document. Because of some problems encountered in the past, failure to submit the two reports in a timely fashion will lead to an embargo on future CERP applications from you or your institution.

Also in paragraphs 11, 12, 13 and 22 to 24, please note the condition that, in the event of publications from this work, we expect due credit given for the support of the IPA. As the Principle Investigator carrying out the research you may also be asked to present the findings at IPA-sponsored research forums, such as the IPA congresses, the annual Joseph Sandler Research Conference, usually in London each year, or at regional or national IPA research meetings.

The IPA is a NFP/Charity membership organization with registration in the USA (04-3392655) and the UK (1071752). Our grant procedures do not allow for the funding of overhead or indirect costs. Travel directly relevant to the award such as to a research training project or to present the findings of the work is acceptable. Secretarial support is also acceptable but only if it is directly relevant to the research, not as an overhead.

Please indicate your acceptance of the terms and conditions contained in this letter and the attached document, "General Conditions Covering IPA RAB Grants," by signing this

letter and returning an original either by post to Mike Tilley, Membership Services Manager, International Psychoanalytical Association, Broomhills, Woodside Lane, London N12 8UD, or by fax to +44 (0) 20 8445 4729 or as an image appended to an email addressed to mike@ipa.org.uk.

With all best wishes for the success of your work.

Sincerely yours,

[Redacted signature box]

Joe Schachter, M.D., PhD.
Chair, Evaluation of Research Proposals and Results Committee of the IPA
jschachter2@nyc.rr.com

Enclosures:

1. Reports of designated referees
2. General Conditions Covering IPA CERP Grants

Accepted on behalf of:

Responsible Authority:
The Anna Freud Centre

Print Name: [Redacted]
Title: [Redacted]
Signature: *[Handwritten Signature]*
Date: 2/10/11

Principal Investigator:
Mary Target

Signature: [Redacted]
Date: [Redacted]

Please note the check will be made out to "Barclays Bank PLC, St Johns Wood and Swiss Cottage Branch P.O. Box 2764 London, NW3 6JD" unless we are advised otherwise.

Tel +44 (0)20 7794 2313
12 Maresfield Gardens, London, NW3 5SU
www.annafreud.org



15.07.2013

Principal Investigator - Grant Application 858 "PIRAT validation"

Dear members of the Evaluation of Research Proposals and Results Committee of the IPA,

We hereby confirm Susanne Hommel, Dipl.Psych, Honorary Research Fellow at the Anna Freud Centre being the Principal Investigator of the research project "Assessing the quality of the Parent-Infant Relationship: Validation of the Parent-Infant Relational Assessment Tool (PIRAT)".

This research project is using data from the Parent-Infant Psychotherapy Randomized Controlled Trial (PIP RCT) by Prof. Peter Fonagy and Michelle Sleed.

The research project does not involve any contact to participants of PIP RCT but focuses solely on data analysis and coding of video clips.

We are happy to provide further information if needed.

Best wishes



Professor Mary Target
Professional Director

Anna Freud Centre is a company limited by guarantee.
Registered in England number 03319604
Registered office 12 Maresfield Gardens, London, NW3 5SU
Registered charity number 1077106.

18 April 2013

Susanne Hommel
12, Maresfield Gardens
LONDON
NW3 5SU
United Kingdom

Dear Susanne,

I am happy to inform you that the Evaluation of Research Proposals and Results Subcommittee (CERP) of the IPA have approved your grant application **858: Assessing the Quality of the Parent-Infant Relationship: Validation of the Parent-Infant Relational Assessment Tool (PIRAT)**, which received a very high ranking in a highly competitive field. The grant will be funded in the amount of **\$3800** to support your research project which, we understand, is substantially less than requested. This reduction reflects limitations in the funds available to support research in combination with the large number of outstanding grant applications received by the CERP. If you are not able to use this level of funding to support your project please inform us immediately so that we can redistribute the funds.

The following narrative comments were provided by reviewers for our committee. I am forwarding them in the hope that you find them useful:

It's an adequate and usefull study

Is a projet of a continued effort to validate scales regarding parent-infant relationship, with best of the art methodology, inter rater reliability and one application to non-specialist, i.e. to be used in home for non-trained people, budget is ok. I think must be funded because its implications to have an integration of Psychoanalysis, Attachment and Neurosciences.

This research project focuses on an innovative research tool for asses parent-child interaccion. And as well as to validate an new research tool. This research project involves apply the research tool to a large sample from the Anna Freud Centre. The only topic is: Would be interesting investigators could explain how they will protect research subjects about ethical issues because this topic was not explained.

The funds will be sent from the IPA office in London to the designated Responsible Authority in due course.

The conditions under which this grant was made were outlined in the original application materials. The document "General Conditions Covering IPA CERP Grants" can be found on our website www.ipa.org.uk by clicking [here](#). You must also attest that the funding we are providing will be used toward the project described in the original submission.

The IPA is a NFP/Charity membership organization with registration in the USA (04-3392655) and the UK (1071752). Our grant procedures do not allow for the funding of

overhead or indirect costs. Travel directly relevant to the award such as to a research training project or to present the findings of the work is acceptable. Secretarial support is also acceptable but only if it is directly relevant to the research, not as an overhead.

The next steps for you to take are as follows:

Please indicate your acceptance of the terms and conditions contained in this letter and the "General Conditions Covering IPA CERP Grants," by signing this letter and returning an original either by post to Mike Tilley, Membership Services Manager, International Psychoanalytical Association, Broomhills, Woodside Lane, London N12 8UD, or by fax to +44 (0) 20 8445 4729 or as an image appended to an email addressed to mike@ipa.org.uk. **Please remember that that no award funds will be released until documentation of IRB approval of your project has been received.**

With all best wishes for the success of your work.

Sincerely,

[Redacted signature box]

Robert M. Galatzer-Levy, M.D.
Chair, Evaluation of Research Proposals and Results Committee of the IPA
galatzerlevy@gmail.com

Accepted on behalf of:

Responsible Authority:
Anna Freud Centre, London, UK

Print Name: [Redacted]
Title: [Redacted]
Signature: [Redacted]
Date: 29.7.13

Principal Investigator:
Susanne Hommel
Signature: [Redacted]
Date: 25.07.2013

04 March 2014

Susanne Hommel
12, Maresfield Gardens
London
NW3 5SU
United Kingdom

Dear Susanne,

I am happy to inform you that the Evaluation of Research Proposals and Results Subcommittee (CERP) of the IPA have approved your grant application **1586: Assessing the Quality of the Parent-Infant Relationship: Validation of the Parent-Infant Relational Assessment Tool (PIRAT)**, which received a very high ranking in a highly competitive field. The grant will be funded in the amount of **\$14960** to support your research project which, we understand, is somewhat less than requested. This reduction reflects limitations in the funds available to support research in combination with the large number of outstanding grant applications received by the CERP. If you are not able to use this level of funding to support your project please inform us immediately so that we can redistribute the funds.

The following narrative comments were provided by reviewers for our committee. I am forwarding them in the hope that you find them useful:

- 1) This research is an important contribution to early detection of pathological mother-infant interaction and has an important preventive value.
- 2) It is an excellent project which deserves to be funded by the IPA. My only recommendation is that the researchers that will code the videotapes include also –on a separate sheet- the emotional resonance of mother-infant interactions. Thus it could have access to other types of registration in the manner of the Levobici's Group in France which could result in another research project.

The funds will be sent from the IPA office in London to the designated Responsible Authority in due course.

The conditions under which this grant was made were outlined in the original application materials. The document "General Conditions Covering IPA CERP Grants" can be found on our website www.ipa.org.uk by clicking [here](#). You must also attest that the funding we are providing will be used toward the project described in the original submission.

The IPA is a NFP/Charity membership organization with registration in the USA (04-3392655) and the UK (1071752). Our grant procedures do not allow for the funding of overhead or indirect costs. Travel directly relevant to the award such as to a research training project or to present the findings of the work is acceptable. Secretarial support is also acceptable but only if it is directly relevant to the research, not as an overhead.

The next steps for you to take are as follows:

Please indicate your acceptance of the terms and conditions contained in this letter and the "General Conditions Covering IPA CERP Grants," by signing this letter and returning an original either by post to Mike Tilley, Membership Services Manager, International Psychoanalytical Association, Broomhills, Woodside Lane, London N12 8UD, or by fax to +44 (0) 20 8445 4729 or as an image appended to an email addressed to mike@ipa.org.uk. **Please remember that that no award funds will be released until documentation of IRB approval of your project has been received.**

With all best wishes for the success of your work.

Sincerely,

[Redacted signature box]

Robert M. Galatzer-Levy, M.D.
Co-Chair, Research Committee of the IPA
galatzerlevy@gmail.com

Accepted on behalf of:

Responsible Authority:
Anna Freud Centre, London, UK

Print Name: _____

Title: Chief

Signature: _____

Date: 04/04/2014

Principal Investigator:

Susanne Hommel

Signature: _____

Date: 06.03.2014

Please note the check will be made out to "Anna Freud Centre" unless we are advised otherwise.

30 June 2015



Dear Susanne,

I am happy to inform you that the Evaluation of Research Proposals and Results Subcommittee (CERP) of the IPA have approved your grant application: **2487 “Assessing the Quality of the Parent-Infant Relationship: Validation of the Parent-Infant Relational Assessment Tool (PIRAT) Global Scales”**, which received a very high ranking in a highly competitive field. The grant will be funded in the amount of \$13054 to support your research project which, we understand, is somewhat less than requested. This reduction reflects limitations in the funds available to support research in combination with the large number of outstanding grant applications received by the CERP. If you are not able to use this level of funding to support your project please inform us immediately so that we can redistribute the funds.

The following narrative comments were provided by reviewers for our committee. I am forwarding them in the hope that you find them useful:

- 1) Excellent improvement of a long-data research over a necessary tool for infant mental health settings in order to detect early developmental risks. In the theoretical background I would mention the ADBB from Guedeney&Fermanian, the alarm distress Baby scale. An accessible and use friendly instrument after a brief training. It has demonstrated good psychometric properties as well as transcultural validity.
- 2) The claim adequately describes the research in course and its importance for psychoanalysis and society, as it studies the unconscious relations between mother and infant. However, in point 9 it does not adequately specify the activities for which the funds will be used.

The funds will be sent from the IPA office in London to the designated Responsible Authority in due course.

The conditions under which this grant was made were outlined in the original application materials. The document “General Conditions Covering IPA CERP Grants” can be found on our website www.ipa.org.uk by clicking [here](#). You must also attest that the funding we are providing will be used toward the project described in the original submission.

The IPA is a NFP/Charity membership organization with registration in the USA (04-3392655) and the UK (1071752). Our grant procedures do not allow for the funding of overhead or indirect costs. Travel directly relevant to the award such as to a research training project or to present the findings of the work is acceptable. Secretarial support is also acceptable but only if it is directly relevant to the research, not as an overhead.

The next steps for you to take are as follows:

Please indicate your acceptance of the terms and conditions contained in this letter and the "General Conditions Covering IPA CERP Grants," by signing this letter and returning an original either by post to Mike Tilley, Membership Services Manager, International Psychoanalytical Association, Broomhills, Woodside Lane, London N12 8UD, or by fax to +44 (0) 20 8445 4729 or as an image appended to an email addressed to mike@ipa.org.uk. **Please remember that that no award funds will be released until documentation of IRB approval of your project has been received.**

With all best wishes for the success of your work.

Sincerely,

[Redacted Signature]

Robert M. Galatzer-Levy, M.D.
Co-Chair, Research Committee of the IPA
galatzerlevy@gmail.com

Accepted on behalf of:

Responsible Authority:
Anna Freud Centre, London, UK

Print Name: ROS Bidmead
Title: Chief Operating Officer

Signature: [Redacted]
Date: 24/07/15

Principal Investigator: Susanne Hommel

Signature: [Redacted]
Date: 05.07.2015

Please note the check will be made out to "Anna Freud Centre, Barclay's Bank PLC, St Johns Wood and Swiss Cottage Branch P.O. 2764 London, NW3 6JD 11" unless we are advised otherwise.

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