Examining the Discriminant Validity of an Observational Coding System of Child Behaviour During Feeding

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Table of Contents

Appendices

Chapter 1

Major Research Systematic Review

Failure to Thrive and Maladaptive Parent-Child Interactions During Mealtimes

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Abstract

Background: This review aims to investigate whether there is an association between the presence of nonorganic failure-to-thrive in children and maladaptive mealtime interaction in parent-child dyads.

Methods: A systematic search of electronic databases was conducted. Papers were excluded if they did not meet the inclusion criteria or methodological quality criteria.

Results: Nine studies were identified. Commonly identified associations between failure to thrive and both the parent's behaviour and the child's behaviour during mealtimes were found. Parents of nonorganic failure-to-thrive children tended to have more difficulty effectively reading the cues from their child and expressed less positive affect. Children with nonorganic failure-to-thrive tended to have more negative behaviours and more difficulty communicating during mealtimes.

Conclusion: Although there appears to be common associations between nonorganic failure-to-thrive children and maladaptive mealtime interactions, further longitudinal research conducted in whole population-based samples would clarify that these findings are representative of the nonorganic failure-to-thrive population and would clarify any causal relationship behaviour has with the onset of the failure-to-thrive.

Keywords: Weight Faltering, Failure-to-thrive, Children, Infant, Interaction, Behaviour.

Abbreviations: NOFTT – Non-organic Failure to Thrive, FTT - Failure to Thrive, GMBS – Gateshead Millennium Baby Study.

Introduction

Inadequate growth, known as failure-to-thrive (FTT) or weight faltering, Frank and Zeisel defined as occurring when a child's growth "deviates from the norms for age and sex" (1988, p1187), but the diagnostic criteria for weight faltering have been inconsistent. A review by Olsen (2006) found that a number of definitions of failure-to-thrive (FTT) were used in studies, with weight gain as the predominant choice of indicator and weight for length as the second most common. Olsen et al. (2007) reviewed the sensitivity of different methods of identifying failure to thrive, and concluded that no single anthropometric measure on its own was adequate for identifying growth delay. The issue of defining FTT is one that affects the reliability of a study and the extent to which the findings can be generalised.

FTT is generally split into two categories; organic FTT, where an underlying medical problem is present, and non-organic FTT when there is no medical problem present. The current review will focus on children with non-organic failure to thrive (NOFTT). As there is no underlying organic cause in NOFTT, the precipitating and maintaining factors can be difficult to identify. It is understood that children who are weight faltering are failing to consume an adequate number of calories to gain weight or to even maintain their weight (Drewett, Kasese-Hara & Wright, 2002). Research investigating the possible factors influencing the child's inadequate intake of food has been conducted, but the causes of FTT remain unclear. Studies have been conducted using both population based cohorts and clinic samples or hospital based samples. For example, in population based studies the following associations have been investigated; mother's mental health, (Dunne, Sneddon, Iwaniec & Stewart, 2007; Drewett, Blair,

Emmett, & Emond, 2004) and maladaptive interactions (Skuse, Wolke & Reilly, 1992). In referred samples or hospital based samples the following associations have been investigated; parental deprivation (Rudolf, 1996), maladaptive interactions (Drotar, Eckerle, Satola, Pallotta, & Wyatt, 1990) and disturbances in attachment relationship between mother and child (Ward, Lee & Lipper, 2000). In addition a review by Alderette and deGraffenried (1986) suggested an association between NOFTT and dysfunctional family relationships and Crittenden (1987) as cited in Benoit (2000), highlights the association between neglect and failure-to-thrive. These associations have all been investigated, but the conclusions reached are often conflicting.

NOFTT cases are often identified through outpatient clinics or inpatient wards, but population-based cohort studies are more likely to include a representative sample which is not influenced by recognition and referral criteria to a paediatric clinic or hospital. Skuse, Gill, Reilly, Wolke & Lynch (1995) found that 1.8% of children in an inner city area and 3.3% of infants born full term are affected with FTT, although they found that only 28% of these children had been referred to hospital. By recruiting from hospital or clinic population, a representative sample spanning different levels of severity of the failure-to-thrive cannot be measured, as all cases are likely to be at the severe end of the spectrum. The difficulties in using a referred sample and matched control groups were highlighted in two studies by Wright, Loughridge, & Moore, (2000). The first study involved weight-faltering cases and controls recruited from the general population. There were no statistically significant differences in demographic data between cases and controls. In the second study, weight-faltering cases were referred and an attempt to match controls was made. This study found cases to be from areas significantly higher in deprivation. However, the case deprivation scores did not

differ from the general population group in the first study. The control group, despite an attempt to control for socio-economic status, was significantly different from the general population, thus highlighting the risk of a bias in the control group also.

An area of the literature in which studies have yielded contradictory results looks at the associations between maladaptive interactions between weight faltering children and their parent during mealtimes. One such study (Ammaniti, Ambruzzi, Lucarelli, Cimino, & D'Olimpio, 2004) recruited a larger sample of 122 NOFTT children and their parents and a comparison group of 211 children developing normally and their parents. Children were recruited through outpatient clinics. It was found that within the NOFTT group the interactions had more conflict in the communication and were non-collaborative and non-empathetic. The mothers of children with NOFTT demonstrated difficulties facilitating the child's autonomy during feeding and were intrusive and controlling. The children's distress was intensely reactive and contrary. However, a study that recruited from a population-based sample, therefore reducing referral bias and obtaining a more representative sample, did not find any difference in the nature of the interaction between children with NOFTT and their parent when compared to a control group from the same cohort study (Skuse et al., 1992). These two studies highlight the variability in outcome that can occur when studying this population. Referral bias is one difficulty that occurs in many studies but issues such as how NOFTT is identified and how interactions are measured can also cause difficulties in generalising from findings.

A number of authors (Benoit, 2000; Frank & Zeisel, 1988; O'Brien, Repp, Williams, & Christophersen, 1991) have reviewed the evidence to suggest an association between FTT and parent-child interaction during mealtimes. O'Brien et al. (1991) concluded that

mothers of FTT infants nurtured and interacted with their child in a significantly different way to that of mothers of children growing normally. They also concluded that infant feeding interaction characteristics are present at, or shortly after, birth that affect the feeding process. These findings suggest that both mother and infant characteristics of interaction are associated with FTT. Benoit (2000), however, noted that a number of studies failed to find a difference in the parent-child interaction in children with FTT and comparisons.

These reviews of the evidence have not been conducted in a systematic or critical manner. The current review aims to review systematically the evidence for an association between nonorganic failure-to-thrive and the parent-child interaction during mealtimes. It also intends to establish whether any common factors influence the disturbance in the feeding interaction. When considering the reliability of the findings, key methodological strengths and weaknesses must be identified. The main factors to consider include the design, sample, how nonorganic failure-to-thrive was defined and what measure was used to assess parent- child interaction.

When considering whether the sample is representative a number of things need to be examined: the sample size, the presence of a possible recruitment bias and whether the age differences within the groups is controlled for and how cases were identified. As discussed earlier, no single anthropometric measure on its own is adequate for identifying growth delay (Olsen et al., 2007); therefore if a study uses more than one anthropometric measure for identifying failure-to-thrive children, it is less likely to wrongly identify cases.

The age range of the children may affect the nature of the interaction taking place. The study by Ammaniti et al. (2004) included participants aged between 1 month and 36 months. Within these ages there are a number of developmental stages and the interaction during a meal may differ greatly between a 6-month-old child and a child at 36 months. Within this time frame children can range from being breast or bottle-fed to spoon-feeding themselves. Ammaniti et al. (2004) were interested in investigating the effects of age in conjunction with the presence of maladaptive feeding interactions in children with feeding difficulties. They found developmental differences in feeding interactions, irrespective of group. They concluded that food refusal behaviours increased in the older groups of children and that the conflict within the dyad peaked at 9-12 months. Ammaniti et al. (2004) suggested that this behaviour reflected the child showing a desire to exert their autonomy over the feeding process, resulting, initially in conflict with the parent and a need to negotiate control. These findings highlight the importance of looking not only for interaction differences between groups, but also within the group depending on the age of the child. Age range, sample bias and definition of NOFTT are just a number of issues that must be considered when critically appraising these studies.

Review Questions

- What is the evidence of an association between the presence of nonorganic failure-to-thrive in children and maladaptive mealtime interaction in parent-child dyads?
- What are the commonly identified maladaptive behaviours during mealtime interactions, between children who are failing-to-thrive and their parent?

Methods

Search Strategy

The following electronic databases were searched: Medline (R) In-Process & Other Non-Indexed Citations and Ovid Medline (1950 to July 2009), All EBM Reviews (Cochrane DSR, ACP Journal Club, DARE, CCTR, CMR, HTA, and NHSEED), PsycINFO (1967 to July 2009), MIDIRS Maternity and infant care, EMBASE Classic and EMBASE (1947 to 2009), CINAHL - Web of Knowledge. The following search terms were entered as text words and summed with OR:

- Weight faltering or Failure to thrive or Growth failure or Growth retard or Growth faltering.
- Child or Children or Childhood or Pre-school or Toddler* or Infan*
- Mother or Carer* or Caregiver* or Parent or Father
- Meal* or Feeding or Eating AND Interaction* or Behaviour or Communicat*

These terms were combined using the AND command in order to capture all papers that describe a mealtime interaction between a child who is weight faltering and their caregiver. Relevant subject headings in Medline, Embase, Psychinfo, were searched. Papers were limited to English language and human subjects. As the research into weight faltering has spanned many years, there was no limit put on the earliest date from which papers would be included in the search to ensure that all relevant papers were captured. Hand searches were done on the reference lists of the selected papers and of review papers in the area of interest.

Criteria for including and excluding studies

The title and abstracts were reviewed to ascertain whether the study met inclusion criteria. If this could not be ascertained from the abstract the full paper was obtained. Studies were included if they met the following criteria;

- described original data from a clinical or epidemiological study,
- included children identified as weight faltering (or other terms used for weight faltering such as failing-to-thrive),
- participants were aged between 0-5 years old,
- used a measure that describes the parent-child interaction during a mealtime.

Papers were excluded if they described an intervention study or case studies, involved participants whose weight faltering was explained by a current medical condition or was described as organic weight faltering, or were unpublished studies or dissertation abstracts.

Search results

The search strategy identified 262 papers from the OVID electronic databases, and 104 papers in the Web of Knowledge electronic databases. Both searches were limited to English and human studies then combined, and duplicate studies were removed, resulting in 193 papers remaining. Papers were excluded based on the inclusion and exclusion criteria, which resulted in 8 papers remaining. Hand searches of reference lists identified two further studies. After rating the papers on the quality criteria one study was excluded for failing to meet the minimum quality rating (Fosson & Wilson, 1987). Therefore, 9 papers were included in the current systematic review, a flowchart of the process of the search strategy can be found in Figure 1.

INSERT FIGURE 1 HERE

Methodological quality

The quality of the papers was reviewed using quality criteria developed specifically for this review, and using general guidelines as a template. This was done to ensure that papers included in the review met certain methodological criteria and as a guide to excluding those that did not. As this review is not concerned with outcomes of interventions, the full CONSORT guidelines (Schulz, Altman & Moher, 2010) were not appropriate, although some aspects of those guidelines were used as a template, as were the SIGN guidelines (Scottish Intercollegiate Guidelines Network, 2008) detailing the development of quality criteria for reviewing case control studies. The quality criteria developed can be found in Appendix 2.1.

When developing the quality criteria, consideration was given to the introduction, design, sample, measure of mealtime interaction, procedure, statistical analysis and the conclusions of the studies. Within each section, a total score of 3 or 4 was awarded depending on the presence or omission of the criteria with the exception of the introduction and discussion. In these sections, 1 point was awarded as it was thought that the sections were not as relevant to the methodological strength of the study. Scores in each section were given depending on whether they satisfied the criteria. The paper was assigned a score out of a possible total of 19. Papers scoring 6 or below were thought to be of too poor quality to be included in the review. Scores of 7-12 were awarded a rating of Adequate and scores of 13-19 were awarded a rating of Good. To ensure inter-rater reliability of scores one third of the papers were reviewed

independently by another Trainee Clinical Psychologist. Concordance was found to be 0.75. Disagreements were resolved through discussion after which a final agreed quality rating was awarded.

Results

The aim of the present review is to investigate the evidence for an association between nonorganic failure-to-thrive and maladaptive mealtime interactions between infant and caregiver. It also intends to establish whether any common factors influence the disturbance in the feeding interaction. The validity of findings will be examined by taking into account a number of methodological issues. Table 1 gives details of each paper.

INSERT TABLE 1 HERE

A number of studies included in the review looked at factors associated with nonorganic failure-to-thrive (NOFTT) other than the mealtime interaction between mothers and child. For example, Coolbear & Benoit's (1999) main aim was to investigate whether children with FTT were at an increased risk of disturbances in their relationship with their main caregiver in comparison to thriving children, while MacPhee and Schneider's (1996) study aimed to develop a reliable tool for assessing feeding interactions for use within an inpatient setting. However, all studies included in the review measured mealtime interaction and reported comparisons between the groups on this measure. It is not within the scope of this review to report all the additional findings from these studies.

The definition of child and infant used across the studies varied, none of the studies included describe children above the age of 3 years, therefore child and infant will be used interchangeably and will refer to children under the age of 3 years old.

The study by Ammaniti et al. (2004) recruited a large sample of children with NOFTT and controls from an outpatient clinic (Table 1). Recruiting from a referred sample may result in an increased risk of referral bias and result in findings being unrepresentative of the general NOFTT population. In addition, the method did not state whether anthropometric measures were used to identify cases, information given indicates that children underwent a clinical and diagnostic evaluation in hospital which identified that all the cases had light or moderate nonorganic failure-to-thrive and that diagnostic criteria was met for Infant Feeding Disorder and FTT using diagnostic criteria (Table 1). Ammaniti et al. (2004) aimed to evaluate the effects of age and feeding interactions during meals, comparing children with non-organic failure to thrive (NOFTT) with a comparison group. They used the Feeding Scale/Observation Scale (Chatoor et al., 1997 cited in Ammaniti et al., 2004), which is described as being able to identify normal and at-risk feeding relational dynamics. It is scored on a 4-point Likert scale which produces a global scale on 4 subscales; 'Affective State of the Mother', 'Interactional Conflict', 'Food Refusal Behaviour' and 'Affective State of the Dyad'. Ammaniti et al. (2004) state that; high scores on the 'Affective State of the Mother' indicates that the mother has more difficulty expressing positive feelings and correctly identifying cues from the child, higher scores on 'Interactional Conflict' indicate that the mother is intrusive and lacks sensitivity to the child's cues regarding timing, in addition the child may show distress and avoidance of feeding as a result, high scores on the 'Food Refusal Behaviour' subscale indicates a lack of reciprocity and high food refusal from the child, and in the 'Affective State of the Dyad' subscale high scores indicate high emotions of anger and hostility between the dyad. A good description of the measure was given and it appears to have good reliability and validity (Table 1).

Amminiti et al. (2004) concluded that higher scores on the subscale 'Affective State of the Mother' suggested that parents of NOFTT children had more difficulty in expressing positive affect and showed a lower ability to read communication signals from their children. This paper is one of only two identified, that divided the children into groups dependent on their age. They found developmental differences in feeding interactions irrespective of group. They concluded that food refusal behaviours increased in the older groups of children and that the conflict within the dyad peaked at 9-12 months. Ammaniti et al. (2004) also found 'Food Refusal Behaviours of the Child' scores were higher in NOFTT children than in the comparison group. This indicated some behavioural difficulties in the child such as opposition, negativity and stubbornness. Although this paper used what appears to be a robust measure of interaction the results must be generalised to the NOFTT population with caution due to issues of referral bias and the possibility of unreliable identification of NOFTT (see Table 2 for a summary of strengths and weaknesses).

INSERT TABLE 2 HERE

Hutcheson, Black and Starr (1993) aimed to investigate whether mothers of children with NOFTT would have more negative affect and be less involved in the feeding session than the mothers of children in a comparison group. They hypothesised that differences would be exaggerated in toddlers with NOFTT. A moderate-sized sample (Table 1 & 2) was recruited from low-income families seen in primary care clinics. As no power calculation was reported, it is not possible to ascertain whether this study had sufficient power to detect reliable effects. The researchers matched children by age,

ethnicity and gender, but this is not an adequate method of controlling for all confounding variables. Limiting recruitment to low-income families results in less representative findings, FTT has been found not to be a problem solely for low income families (Blair et al., 2004; Wright, Parkinson & Drewett, 2006). However, the method used to identify NOFTT appears to be reliable (Table 1) anthropometric criteria was used, based on national charts, Hutcheson et al. (1993) state that children's current weight-for-age had to be at below the 5th percentile or weight-for-height had to be at or below the 10th percentile. The wide age range of participants introduces the difficulty of ensuring developmental differences within groups did not affect results, but Hutcheson et al. (1993) addressed this problem by dividing the children into groups of infants and toddlers. They were then able to investigate whether age exerted an influence, as well as controlling for developmental differences in feeding abilities within the groups.

Hutcheson et al. (1993) adapted the Parent Child Early Relational Assessment (PCERA, Clark, 1985 as cited in Hutcheson et al., 1993) by removing redundant scales to leave parent, child and dyadic subscales; 'Maternal affective tone', 'Maternal level of involvement', 'Child affective tone', 'Child level of involvement' , 'Dyadic affective tone' and 'Dyadic level of involvement'. The modification of the scales meant that further validation of the scale using a larger sample was required. Although the raters appeared to achieve a high inter-rater reliability (Table 1), no further details were given regarding administration of the scale. Using this measure, the only significant result was a group-by-age interaction whereby, within the NOFTT group, maternal affective tone was less positive among toddlers with NOFTT than infants with NOFTT. There were no age-related differences found within the comparison group. They concluded that there were few differences in the mother-child interactions during mealtimes between the

NOFTT and comparison groups. Strengths of this study were that NOFTT children were reliably diagnosed and the measure used was reliable. However, the issues raised regarding the statistical power of the study and the ability to generalise from the results means that the findings may require further validation through future research.

A study by Black, Hutcheson, Dubowitz & Berensonhoward (1994) recruited a sample of children with NOFTT and a comparison group from outpatient paediatric clinics. Children were all from low-income families, and were matched on age, gender, race and socio-economic status. Although no power calculation was reported, the number of participants was large (Table 1). The age range of participants was wide and, as Black et al. (1994) failed to analyse whether age was a factor in the interaction between parent and child within the groups, effects specific to age or developmental stage may have been present but not identified. The method used to identify NOFTT participants (Table 1), appears to be reliable as two anthropometric measures were used, Black et al. (1994) describe the inclusion criteria as weight-for-age below the 5^{th} percentile and birth weight appropriate for gestational age. Black et al. (1994) used a modified version of the Parent Child Early Relational Assessment (PCERA), high internal consistency and inter-rater reliability was reported. The measure combined a number of the items from the original assessment into two parental factors, Parental Nurturance and Parental Negative Control, and one child factor; Child Interactive Competence. Black et al. (1994) describe the subscale Parental Nurturance as measuring social initiative of the parent, their involvement with the child and cheerful mood, high scores indicate higher occurrence of these behaviours. Parental Negative Control is described as hostility, unresponsiveness and intrusiveness, low scores indicate a higher occurrence of these behaviours, the two parenting subscales were used to measure parenting style. Child

Interactive Competence was described as measuring the child's competence in communication, alertness and positive mood; low scores indicate a lack of these behaviours. They found a significant difference in the distribution of parenting styles between the NOFTT group and the comparison group, with twice as many parents scored as Neglecting in the NOFTT group than in the comparison group. Black et al. (1994) categorised parents as falling into the Neglecting parenting style based on scores on the Parenting Nurturing items and Parental Negative Control items. Neglecting parents scored below the median (of comparison group) on Parental Nurturance and above the median on Negative Parental Control, suggesting these parents were uninvolved in the meal, had the tendency to ignore cues from their child and gave little direction or guidance during the meal.

Drotar et al. (1990) aimed to investigate whether the mothers of NOFTT infants would demonstrate fewer adaptive feeding interactions than the mothers of thriving infants. They recruited a moderate sized sample of NOFTT children and controls (Table 1 & 2). NOFTT was assessed using what appears to be a sufficient method as two anthropometric measures were used in the diagnosis (see Table 1). However, the NOFTT group was recruited from inpatient wards and observed retrospectively after they had been discharged from hospital and no longer met criteria for NOFTT. There is little description of the measure of interaction developed by Ainsworth and Bell (1969) (as cited in Drotar et al., 1990) or its reliability, validity or administration but details of inter-rater reliability appeared to be high (Table 1). The authors stated that the observers rated maternal behaviour during feeding on three dimensions; Timing, Pacing and Termination of feeding, but these dimensions appear to measure only parent factors in the interaction. Drotar et al. (1990) described high scores in 'timing' as indicating

flexible adaption to the child's cues, high scores in 'pacing' as sensitivity to the child's feeding pace and high scores in 'termination of feeding' as indicative of feeding being terminated based on the parents sensitivity to the child's cues. The interaction was observed in the home rather than in a clinic or hospital which ensured that the interaction was as representative of a normal mealtime as possible. It was found that only termination of feeding was significantly different between the NOFTT group and a comparison group. Drotar et al. (1990) concluded that mothers of children with failure to thrive terminated feeding in a more arbitrary manner. In the dimensions of Flexibility of Timing and Sensitivity, lower mean scores of the NOFTT group did not reach significance. The method of recruitment and the retrospective design reduced the validity of these findings within the NOFTT population, as the cases were likely to have more severe NOFTT. Moreover, although children were matched with comparison children on a large number of characteristics (Table 1), it is never possible to control for all confounding variables and results must be generalised to the FTT population with caution.

Lobo, Barnard and Coombs (1992) aimed to identify differences in the parent-child interaction during mealtimes between children with NOFTT, organic failure to thrive (OFTT) and a comparison group of thriving children, all recruited from hospital outpatient clinics. The sample size was small (Table 1 & 2) and no power calculation was reported. In addition, little information is given on how NOFTT was diagnosed, Lobo et al. (1992) give one anthropometric measure as their diagnostic criteria, child's weight being below the third percentile; it is therefore unclear whether the FTT participants were reliably identified.

Lobo et al. (1992) used The Nursing Child Assessment of Feeding Scale (NCAFS, Barnard, 1978a as cited in Lobo et al., 1992) to measure interaction during mealtime. The assessment is well described and a good description of the reliability and validity of the measure is given (Table 1). Lobo et al. (1992) describe the six subscales that include both child and parent measures. The parent subscales consist of Sensitivity to Cues, Response to Distress, Cognitive Growth Fostering and Social-Emotional Growth Fostering. The child subscales consist of Responsiveness to Parent and Clarity of Cues. The measure is scored based on a dichotomous 'yes' or 'no' response, a more graded report of the interaction would be achieved if frequency count data were collected. In addition, the interactions were observed while the child was an inpatient rather than in the child's home where a more natural interaction might have been observed. As the participants were obviously inpatients, the raters were therefore not blind to whether they were observing a child with NOFTT or a comparison. Lobo et al. (1992) found the NOFTT group scored significantly lower on the Social Emotional Growth Fostering and Cognitive Growth Fostering subscales, suggesting that mealtimes were less playful, that parents showed less affectionate engagement in social interactions, gave less appropriate reinforcement of desired behaviours and provided less stimulation to the child. Parents of children with NOFTT had significantly higher levels of stress due to recent life events, which may be a confounding variable that affected their ability to engage effectively in the mealtime interaction. Methodological issues such as small sample size, referral bias and observers not being blind to a child's status all reduce the ability to generalise these findings.

MacPhee and Schneider (1996) aimed to develop a fast, reliable and valid tool, the Feeding Checklist, measuring feeding interactions between parent and child in an

inpatient setting. They describe to tool as being made up of 25 items measuring child and parent behaviours. There is no scoring system and MacPhee and Schneider (1996) state that the measure is designed to highlight behaviours that may require professional intervention. To test the validity of the Feeding Checklist they compared it to the Chatoor Feeding Scale (Chatoor et al., 1984 as cited in MacPhee & Schneider, 1996) which is known to have good discriminant validity. MacPhee and Schneider (1996) describe the Chartoor Feeding Scale as being made up of 46 items measuring both parental and child behaviours. Both instruments were applied to a feeding interaction between NOFTT children and their parents and a comparison group. They found significant differences between the groups on the Feeding Checklist whereby mothers of thriving children maintained better visual and vocal contact while mothers of NOFTT children were more likely to ignore the child's cues. The results from the Chatoor Feeding Scale were similar. Mothers of thriving infants waited for the child's cues more and mothers of NOFTT children overrode the child's cues. Mothers of thriving children also expressed more positive affect. Moreover, NOFTT children displayed more negative behaviour and more broken dyadic contact than the children in the comparison group. The Chatoor Feeding Scale showed significant differences between groups on the items measuring the child's visual attention and positive affect while the comparison group displayed more vocal cues indicating a desire to eat. Little information was given regarding how NOFTT was defined or diagnosed (Table 1); the only definition given was a persistent decline in weight or a lack of weight gain since birth. Furthermore, the NOFTT sample was recruited from inpatient wards, which implies a non-representative sample of the nonorganic failure-to-thrive population as all cases were likely to be at the severe end of the spectrum. Cases and controls were matched on age, gender and ethnicity but such matching cannot control for all confounding factors. No details were

given regarding the use of power calculations to ascertain whether the small number of participants conferred sufficient power.

Coolbear and Benoit (1999) hypothesised that they would find more problematic behaviour during the feeding interaction between children with NOFTT and a comparison group of thriving children using the Infant Feeding Scale (IFS: Chatoor, Dickson, Schaefer, & Egan, 1985 as cited in Coolbear & Benoit, 1999). Coolbear and Benoit (1999) describe the measure as comprising of 46 items, making up 5 factors measuring both parent and child behaviours. They highlight how they utilised four out of the five factors; Dyadic Reciprocity, Maternal Non-contingency, Dyadic Conflict and Struggle for Control. The NOFTT group was found to have significantly less dyadic reciprocity, suggesting less eye contact and less positive affective exchange compared to the dyads in the comparison group. A good description of the IFS was given and the internal consistency and inter-rater reliability were reported (Table 1). Unfortunately, however, only the first rater was blind to the children's status. NOFTT children and comparison children were recruited from an outpatient clinic and included a range of ages from 4-36 months. The age and developmental difference within the groups was not assessed or controlled. No power calculation was reported although the sample was of moderate size and the method of assessing NOFTT appears to have been sufficient (Table 1) as it utilises two anthropometric measures. Again, the method of recruitment in this study reduced the ability to generalise the finding across all children with NOFTT.

Black and Nitz (1996) assessed the mealtime interaction between children with NOFTT and their parents and a comparison group. They recruited a moderate-sized sample of

NOFTT children and a comparison group from paediatric clinics (Table 1 & 2). As noted previously, this method often results in referral bias and an unrepresentative sample. Information regarding the required criteria for a diagnosis of NOFTT was given and appears sufficient (Table 1), as it utilises two anthropometric measures. The Parent Child Early Relational Assessment tool (PCERA, Clark et al. 1984 as cited in Black and Nitz, 1996) was used to assess the interaction. Little information was given regarding the measure, but the internal consistency was reported (Table 1). Black and Nitz (1996) do indicate that both child and parent behaviours were measures as items were organised into a Parental Warmth subscale and Child Mealtime Competency subscales. The main aim of this study was to examine the effects of grandmother co-residence on the parenting and development of children who were failing to thrive in comparison to thriving infants, it was not the aim to establish associations between interaction and NOFTT and, as a result, little detail is give regarding this, however, it is reported that no effect of group was found on the measure of interaction.

Skuse et al. (1992) used the Feeding Interaction Scale (Wolke, 1986) to assess parent-child interaction in children with NOFTT in comparison to thriving infants. No further information was given regarding the content of this scale or its validity and reliability. However, Skuse et al. (1992) give details of the Cognitive Growth Fostering Subscale of the Nursing Child Assessment Teaching Scale (Barnard, 1978b cited in Skuse et al., 1992) which was also used to assess the quality of the mealtime interaction. They highlight that this subscale measures maternal behaviour in four categories; Sensitivity to cues, Response to distress, Socioemotional growth fostering and cognitive growth fostering. Child behaviour is also measures in two subscales; Clarity of Cues and Responsiveness to parent. Participant numbers were moderate (Table 1 & 2) but no

power calculation was reported. This was the only study included in this review to recruit participants from a population-based study, and thus was more likely to capture a representative community sample. Only 9 of the 49 cases of children with NOFTT had been referred to hospital by 1 year of age. No differences were found between groups on the measures of mealtime interaction. Despite some methodological weaknesses, the use of a population-based sample is valuable when considering whether these findings are representative.

Discussion

The aim was to investigate the evidence of an association between nonorganic failure-to-thrive in children and maladaptive mealtime interaction between parent-child dyads, and to highlight any commonly identified maladaptive behaviours in the nonorganic failure-to-thrive population. Seven studies identified such an association. The studies differed in methods of assessing the interaction between the parent and child, but eight out of the nine studies included measured both parental factors and child factors (Ammaniti et al, 2004; Black et al., 1994; Black & Nitz, 1996; Coolbear & Benoit, 1999; Hutcheson et al, 1993; Lobo et al, 1992; MacPhee & Schneider, 1996; Skuse et al., 1992) and only one study measured only parental factors (Drotar et al., 1990).

Parental Factors

When examining parental factors some common behaviours did appear to be present. Four studies found the mothers of NOFTT children showed less positive affect or affection than the mothers of thriving children. It also appears that the mothers of NOFTT children had more difficulty communicating effectively with their child and in reading their child's cues during feeding. In addition, one of the studies found that mothers of NOFTT children terminated feeding in a more arbitrary manner, which may reflect a lack of attunement to the child and an inability to read their communications about a desire to continue eating.

Child Factors

Only two studies identified differences in child behaviour during mealtimes in NOFTT children and healthy children. However, both studies found that children with NOFTT

had more difficult or negative behaviours. In addition both studies found more conflicting communications and less collaboration in NOFTT dyads.

From the results of the papers included in this review, it would appear that the ability of the mothers to communicate effectively in a positive manner, their ability to read the child's cues during feeding and the child's negative behaviour are all factors associated with NOFTT in children

Due to the fact that all studies measured mealtime interaction after the child had been diagnosed with NOFTT, it is not possible to ascertain whether the maladaptive behaviours are causal or whether they develop as a result of other factors such as the child's behaviour or temperament, mother's mental health or family interaction. As observing and rating behaviours can be a time-consuming and lengthy process, mealtimes are often only observed once. Several observations during a longitudinal or longitudinal cohort study would give a better indication of any causal relationship between maladaptive behaviours and the onset of NOFTT. Although it is not possible to identify the causal nature of the associations identified in this review, if the findings were to be considered irrespective of methodology they would suggest that certain parent and child behaviours during mealtimes are associated with NOFTT. However, the methodological rigour of these studies must be taken into consideration.

The lack of a consistent means of assessing children for nonorganic failure-to-thrive means that samples may differ, making it difficult to generalise from the findings. In addition, the number of comparable findings across the studies is restricted due to the variety of measures used to assess mealtime interaction and the fact that some measures

were more robust than others. A number of studies used measures that had been adapted and as a result it was unclear how valid these measures were. Whilst there does not appear to be a gold standard tool for measuring mealtime behaviour, results still identified common factors associated with NOFTT across studies and irrespective of assessment measure.

The method of recruiting samples is one of the main difficulties when considering whether results from the included studies can be generalised to the NOFTT population. As discussed, a sample of NOFTT children who have been hospitalised may present as more severe than a sample identified through a cohort study or even an outpatient sample. Only one paper in this review included children identified from a birth cohort and all other children were recruited from hospital referred samples. Identification and referral thresholds would suggest the samples and possibly the controls may not be truly representative of the population.

Given that the methodological issues have made it difficult to draw conclusions, it may be helpful to assess the findings from the studies with the highest scores on the quality criteria in order to answer the review questions. Ammaniti et al. (2004) and Black et al. (1994) received the highest scores (13 - Good) on the quality criteria, indicating they have the strongest methodological design. Both studies findings suggest that there is an association between the presence of nonorganic failure-to-thrive and maladaptive mealtime interactions in parent-child dyads. Ammaniti et al. (2004) found mothers of NOFTT children had more difficulty expressing positive affect and a lower ability to read signals from the child. They also found that children in the NOFTT group were more oppositional and stubborn and expressed more negativity. Similarly, Black et al.

(1994) found that parents of NOFTT children were less involved in the meal, ignored cues from the child more and gave little direction or guidance to the child. It would appear that the common maladaptive behaviours during the mealtime interaction would be the parent's inability to be sensitive to the child's cues during the meal. This factor as one of the main maladaptive behaviours associated with nonorganic failure-to-thrive is supported by the findings from Drotar et al. (1990) and MacPhee and Schneider (1996), the next two highest scoring papers, as they also found the sensitivity of the parent to the child's cues as a factor associated with the NOFTT group.

Conclusion

This review highlights that both maternal and child behaviours have been commonly identified as being associated with NOFTT in children, although these studies are often methodologically flawed the four highest scoring studies on the quality criteria all found the parent's sensitivity to the child's cues to be a factor associated with NOFTT. Prospective studies, using samples recruited from population based studies, may help to add more weight to the evidence that the associations identified in this review are a true reflection of the problematic mealtime behaviours associated with nonorganic failure-to-thrive. A longitudinal study in which more than one observation is undertaken may clarify whether interactive behaviours of the parent and child and the parent's lack of sensitivity to the child's cues are precipitating factors in the child's nonorganic failure-to-thrive.

Key Points

- Associations between failure to thrive and child-parent interaction can be found.
- Mothers of children with nonorganic failure-to-thrive tend to have more difficulty communicating effectively with their child and in reading their child's cues during feeding.
- Children with nonorganic failure-to-thrive tended to be more difficult, display more negative behaviours and display more conflicting communications during feeding.
- These associations should be drawn with caution due to a number of methodological flaws in much of the failure-to-thrive literature.

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Figure 1: Flow diagram of papers excluded

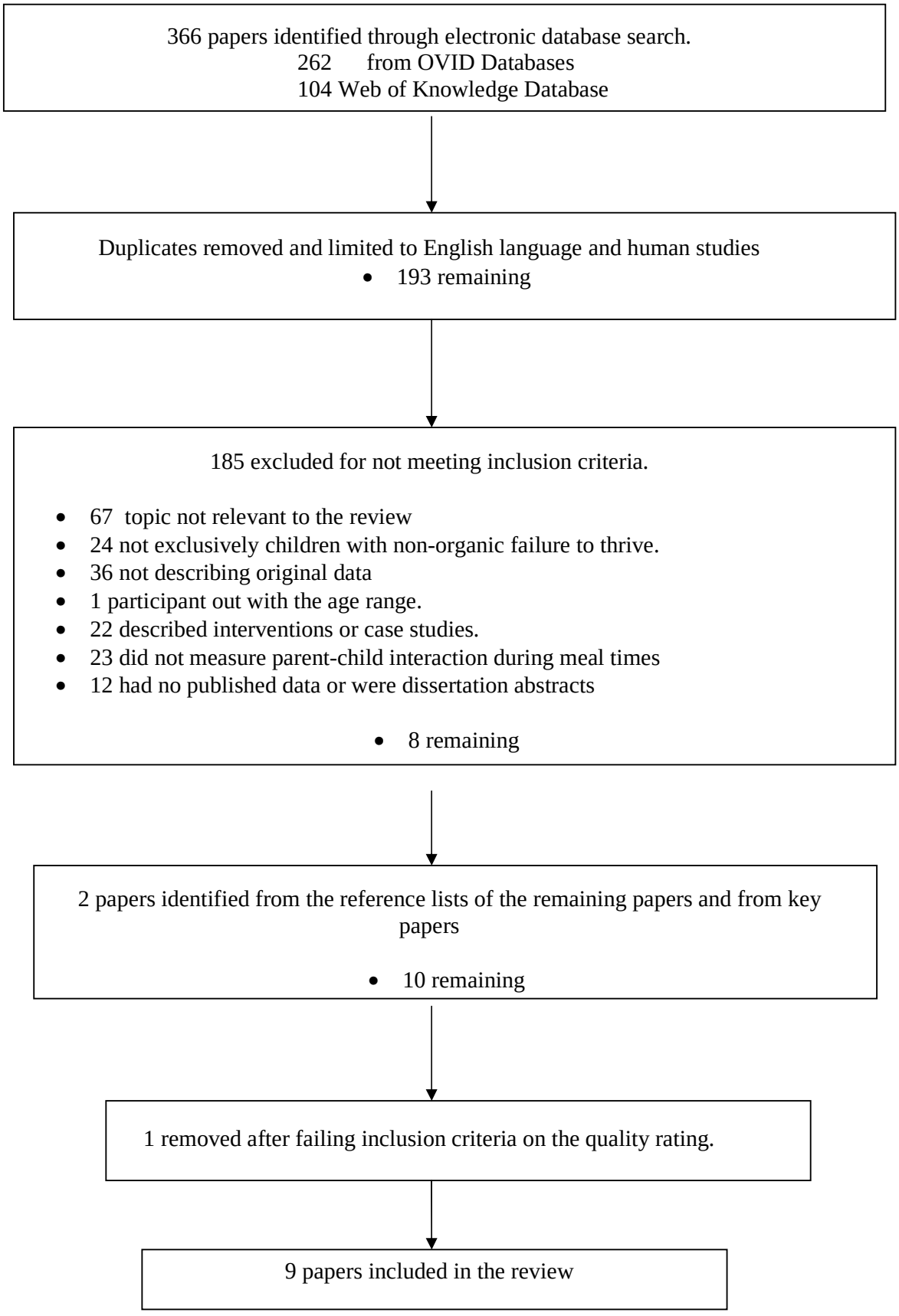

Table 1 – Descriptive summary of studies included

Study And Quality Rating	Design	Setting	N Age range	Failure to thrive definition	Measure of interaction	Measure Valid /Reliable?
Ammaniti, Ambruzzi, Lucarelli, Cimino & D'Olimpio (2004) Good – 13	Cross-sectional Case-comparison	Comparison group from child care centres. Feeding Disordered group from paediatric hospital.	211 = normal development 122 = NOFTT 1 – 36months	Classification criteria Zero-to-three classification and DSM-IV.	Feeding Scale-Observation Scale (Chartoor et al. 1997) .	Reference made to validity and reliability, details not given.
Black, Hutcheson, Dubowitz & Berensonhoward (1994) Good – 13	Cross sectional, matched case-comparison (matches on age, gender, race and socio-economic status)	Inner-city paediatric primary care clinics.	NOFTT= 102 Comparison =67 Under 25m Mean 13.3m, SD=5.7m	Weight for age below 5th percentile on NCHS growth chart and birth weight appropriate for gestational age.	Modified version of Parent Child Early Relational Assessment (PCERA, 1984).	Internal consistency ranged from 0.84 to 0.89, inter-rater reliability of over 0.90.
Drotar, Eckerle, Satola, Pallotta, & Wyatt (1990) Adequate – 12	Cross sectional, matched case comparison. (child matched on age, gender, race and birth order, mothers matched on education and age & family matched on size income and structure)	NOFTT children recruited from 7 area hospitals. Comparison group physically healthy infants from clinics and hospitals.	NOFTT =47 Comparison = 47 1-9 months	Weight below 5th percentile on National Centre for Health Statistics (NCHS) charts and decrease in weight gain from normal limits at birth to 5th percentile.	Used procedure developed by Ainsworth and Bell (1969). Rated on 3 dimensions: 1) Timing 2) Pacing 3) Termination of feeding.	Inter-rater reliabilities given for each dimension; 0.81, 0.87 and 0.90 respectively. No other information on reliability of validity given.

Table 1 Descriptive summary of studies included

Study And Quality Rating	Design	Setting	N Age range	Failure to thrive definition	Measure of interaction	Measure Valid /Reliable?
MacPhee & Schneider (1996) Adequate – 12	Cross-sectional, matched case comparison (matched on age gender and ethnicity)	NOFTT participants hospitalised with a diagnosis of FTT Comparison; hospitalised for minor surgery.	NOFTT =25 Thriving infants=25 5.9 months -13.9 months.	Persistence decline in weight or a lack of weight gain since birth.	Feeding Checklist (development of this tool in comparison to Chatoor's Feeding Scale)	Content validity – 100% agreement.
Coolbear & Benoit (1999) Adequate – 11	Cross sectional case comparison.	Participants recruited in outpatient clinics in tertiary care paediatric hospital.	N = 57 FTT = 30 Growing normally = 27 Age 4-36 months	Weight for age below 5th percentile on growth NCHS growth charts, weight decreased by at least 2 standard deviations since birth.	Infant Feeding Scale (IFS, Chartoor, Dickson, Schaefer & Egan, 1985)	Inter-rater reliability ranges from 0.52 to 0.96 Internal consistency alphas for each dimension range from 0.47 to 0.84 one dimension removed due to low internal consistency.
Hutcheson, Black & Starr (1993) Adequate – 11	Cross-sectional, matched case control (matched on age, gender and race)	Recruited from primary care clinic.	N = 68 34 = NOFTT 34 = Comparison Age 8 – 26 months Divided into 2 age groups using median split. Toddlers 13.5 – 26months Infants 8-13.4months.	Weight for age at or below 5th percentile or weight for height at or below 10th percentile on NCHS.	Modified Version of Parent-Child Early Relational Assessment (PCERA Clark, 1985).	Reviewed to avoid redundancy. Inter rater reliability from 0.87 – 0.99

Table 1 Descriptive summary of studies included

Study And Quality Rating	Design	Setting	N Age range	Failure to thrive definition	Measure of interaction	Measure Valid /Reliable?
Skuse, Wolke & Reilly (1992) Adequate – 11	Whole population study.	Community paediatric services and child health clinics.	1558 in cohort NOFTT = 47 Control = 47 Age 12-16 months.	FTT diagnosed if normal birth weight and weight for age at or below the 3rd percentile and this growth trajectory sustained for 3 months.	Feeding Interaction Scale (Wolke, 1986) & Cognitive Growth Fostering subscale of Nursing Child Assessment and Teaching Scale (NCATS, Barnard, 1978)	No information on reliability and validity of measure given.
Lobo, Barnard & Coombs (1992) Adequate – 11	Prospective, cross sectional, case comparison.	FTT – admitted to hospital with FTT Comparison – secondary analysis of data from a nursing study.	NOFTT= 5 OFTT= 5 Control= 17 Age 3 – 36 weeks Comparison group – 4months	Weight below 3rd percentile	Nursing Child Assessment Feeding and Teaching Scales (NCAFS & NCATS, Barnard, 1978)	Internal consistency range from 0.56 – 0.69. Concurrent validity with HOME 0.54
Black & Nitz (1996) Adequate – 9	Cross sectional Case comparison	Both groups recruited from inner-city paediatric clinic.	FTT=37 Comparison = 42 Age; under 34 months (mean = 12.4m, SD, 5.7)	Weight for age below 5th percentile and/or weight for height below 10th percentile on NCHS growth charts, birth weight appropriate for gestational age.	Parent Child Early Relational Assessment (PCERA, Clark et al., 1984)	Validity described previously. Internal consistency 0.82 & 0.88

Table 2 – Summary of Systematic Review papers methodological strengths and weaknesses

Study And Quality Rating	Recruitment bias Low Whole population Medium Referred High Hospital	Age differences within groups controlled for.	Sample Size Small - under 30 Moderate –30 to 99 Large – over 100	Over 2 anthropometric measures of FTT	Valid Measure	Reliable Measure
Ammaniti et al. (2004) Good – 13	Medium	+	Large	_	+	+
Black et al. (1994) Good – 13	Medium	_	Large	+	_	+
Drotar et al. (1990) Adequate – 12	Medium	_	Moderate	+	_	+
MacPhee & Schneider (1996) Adequate – 12	High	_	Moderate	_	+	+
Coolbear & Benoit (1999) Adequate – 11	Medium	_	Moderate	+	_	+
Hutcheson et al. (1993) Adequate – 11	Medium	+	Moderate	+	_	+
Skuse et al. (1992) Adequate - 11	Low	_	Moderate	+	_	_
Lobo et al. (1992) Adequate - 11	High	_	Small	_	+	+
Black & Nitz (1996) Adequate - 9	Medium	+	Moderate	+	+	_

+ Yes

- No

Chapter 2

Major Research Project

Examining the discriminant validity of an observational coding system of child behaviour during feeding

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Abstract

Background:

Parents of weight faltering children have been found to be less sensitive than control group mothers, to their child's communication during mealtimes. However, little is known about whether the communication signals the child gives during the meal differ. This study aims to establish discriminant validity of a new observational tool, the Child's Interactive Mealtime Behaviour (CIMB) scale, designed to measure the child's communication during meals.

Methods:

Study one: Mealtime videos were used from 30 children identified as weight faltering and 29 controls identified previously in a nested case control study within the Gateshead Millennium Baby Study (GMBS). Videos were rated using the Child's Interactive Mealtime Behaviour (CIMB) scale, designed to identify the cues children give their parent regarding their readiness to be fed. Study Two: The CIMB scale was applied to the mealtime videos of a group of 12 children who were outpatients at a hospital feeding clinic. The results from this clinical sample are compared to the control group from the GMBS.

Results:

No significant difference in feeding behaviour was found between the cases and control group in the GMBS sample. When interactions were analysed individually, irrespective of group, the position of the child's head and mouth significantly predicted whether the child would eat, but most mouthfuls of food taken were not actively cued by the child.

Conclusions:

The CIMB scale does not discriminate between children growing normally and children with weight faltering or feeding behaviour problems. It may be that a more global measure is required to identify maladaptive behaviours that discriminate between the groups. The findings indicate that even children with feeding behaviour problems are generally passive during meals and frequently eat even when they do not appear oriented towards the food.

Keywords: Weight Faltering, Failure to thrive, Children, Infant, Interaction, Behaviour.

Abbreviations: NOFTT – Non-organic Failure to Thrive, FTT - Failure to Thrive, GMBS – Gateshead Millennium Baby Study, CIMB – Child's Interactive Mealtime Behaviour, RHSC – Royal Hospital for Sick Children

Introduction

Weight faltering, historically known as failure to thrive (FTT), occurs when an infant displays a failure in physical growth and their weight gain is significantly below normal (Chatoor, 1997). It is known that weight faltering occurs when the infant's energy intake is inadequate and they are, therefore, not receiving an adequate number of calories to maintain growth and gain weight (Drewett, Kasese-Hara & Wright, 2002). However, it is often unclear why these children fail to receive an adequate amount of energy and why they display impaired feeding.

Historically it was thought that deprivation and parental neglect were two of the main causes of non-organic weight faltering (Crittenden, 1987; Patton & Gardner, 1962; Rudolf, 1996). In a study of children with non-organic failure to thrive (NOFTT) Rudolf (1996) concluded that the majority of children with NOFTT live in poverty. However, more recent research does not support Rudolf's conclusion. Blair, Drewett, Emmett, Ness and Emond (2004) analysed prospective data from the Avon Longitudinal Study of Parents and Children (ALSPAC). There was no clear association of poorer growth with higher deprivation. This result was replicated by Wright, Parkinson, & Drewett (2006a) who found no clear trend between poor growth and high deprivation. The association between neglect and deprivation still remains unclear. Poverty alone does not account for why some children fail to grow well.

In addition to neglect and deprivation, research also suggests associations between maladaptive feeding interactions and weight faltering. Weight faltering is thought to arises, in part, because of dysfunctional relationship patterns between parent and child

(Drotar, 1991). Studies have suggested a number of ways that the caregiver-infant interaction can breakdown and includes disengagement within the family (Alderette & deGraffenried, 1986), insecure attachment (Ward, Lee & Lipper, 2000) and maternal mental health problems (Dunne, Sneddon, Iwaniec & Stewart, 2007; Blair et al., 2004; Drewett, Blair, Emmett & Emond, 2004; Wright et al., 2006a). Further to this, research studies have focused on parental behaviour during mealtimes in relation to their infants weight faltering. A number of studies have examined the interaction of parents and children with failure to thrive, measuring the behaviour of the parent during the meal and comparing it to a comparison group of parents and their thriving infants. Factors such as a lower ability to read communication signals from their children (Ammaniti, Ambruzzi, Lucarelli, Cimino, & D'Olimpio, 2004) a tendency to ignore cues from their child, giving little direction or guidance during the meal (Black, Hutcheson, Dubowitz, & Berensonhoward, 1994), less parental engagement in social interactions (Lobo, Barnard & Coombs, 1992) and less positive affect from the parent (MacPhee & Schneider, 1996) were found to be associated with the failure to thrive groups. Thus suggesting that what the parent does and how they respond to their child may be a factor in the development or maintenance of the child's weight faltering.

Much of the research examining maladaptive feeding interactions in FTT children has focused on the parent's behaviour in the interaction; few studies have focussed on the behaviour of the child. Little is known about what role, if any, child behaviours plays in the breakdown of the interaction. Using data collected from a large birth cohort study, the Gateshead Millennium Baby study (GMBS) Wright, Parkinson and Drewett (2006b) proposed that successful feeding depends on a complex interaction between caregiver and child. Parents' reports of the child's appetite at 6 weeks was a significant predictor

of weight faltering at 12 months, as was the parents' response to the child's food refusal. This suggests that an intrinsic characteristic of the child (appetite) is predictive of weight faltering and that the maternal handling of the child's refusal of food may also play a role in the development of weight faltering (Wright et al., 2006b). However, this study measured the child's behaviour through report from the parent and not through independent observations. It does, however, indicate that taking into account both parent and child behaviour gives a more informative picture of the maladaptive interaction that may be associated with weight faltering.

Children with mild to moderate failure to thrive and controls were identified from the GMBS and videoed during a mealtime. Parkinson, Wright and Drewett (2004), analysed these videos using a simple observational measure which recorded the behaviour of the child and found no differences between cases and controls. However, this coding system was limited to recording whether the child accepted, refused or rejected food or whether they fed themselves. It did not look at the interaction with the caregiver, for example the cues the child gives indicating readiness to be fed or the child's disruptive behaviour.

Sanders, Patel, Le Grice and Shepherd (1993) aimed to identify differences in child-parent interactions between children with persistent feeding problems and non-problem eaters. They used an observational measure, the Mealtime Observations Schedule (MOS), developed to identify differences in appropriate feeding behaviour and disruptive feeding behaviour. They found feeding-disordered children displayed significantly more disruptive behaviours during mealtimes than non-problem eaters. This finding was later supported by MacPhee and Schneider (1996) who found that a

group of children with NOFTT displayed more negative behaviour during mealtimes than children in a comparison group. In addition Ammaniti et al. (2004) found more difficult behaviours, such as being oppositional, negative and stubborn, in a group of children with feeding disorders than in the children in a comparison group.

The study by Sanders at al. (1993) used a sample of children with feeding disorders rather than those who were weight-faltering, and therefore it is not known whether it would discriminate between children who were weight faltering and controls, as not every child with a feeding disorder has poor weight gain. Also, the measures used by MacPhee and Schneider (1996) and Ammaniti et al. (2004) looked at a variety of mealtime behaviours of both the mother and the child measuring dimensions such as general disruptive behaviour, affect, child's position, and parent's awareness of child's cues. None of the measures yielded behavioural count data; rather, the measures used a Likert scale or yes/no responses to measure the presence of each dimensions. Therefore, there is a risk that the studies underestimate the extent to which the child factors are associated with weight faltering.

One study by Mathisen, Skuse, Wolke & Reilly (1989) examined only the behaviour of the child. They proposed that immature and abnormal oral-motor behaviour and deficient signalling of needs during feeding could play a role in the maintenance of weight faltering. They compared 9 infants who were failing to thrive to 9 matched comparisons and found that children with FTT had less well adapted ways of communicating their needs during mealtimes. Comparison infants gave more unambiguous vocal, gestural or body movement signals to indicate such things as whether they liked or disliked particular foods, wanted to eat faster or slower and

whether they were sated or wanted more. This was a very small study which did not use a formal measure to assess feeding behaviours, but despite these limitations the results that it yielded have been supported by MacPhee and Schneider (1996) who found that children without feeding disorders displayed more vocal cues indicating a desire to eat than children failing to thrive.

An unpublished study by Joanne Robertson (Clinical Psychology Doctorate Trainee at Glasgow University, 2007), which has recently been submitted for publication (Wright, Robertson, Puckering and Parkinson, 2010), adapted the Mellow Parenting coding system (Puckering, Rogers, Mills, Cox & Mattsson-Graff, 1994) to apply to videotaped mealtimes collected for the study described above (Parkinson, et al., 2004) within the GMBS cohort study. This study examined the interaction between caregiver and infant and supported previous findings whereby caregivers of control infants had significantly higher levels of interactions and sensitivity than caregivers of the case infants. Sensitivity was described as the ability of the caregiver to perceive and respond to signals from the infant. The Mellow Parenting coding system appears to be helpful in establishing in what way the caregiver's behaviour is affecting the interaction, but this system requires a high level of training to ensure reliability and focuses predominantly on the parent's behaviour. Wright et al. (2010) suggest that it is unclear whether the mother's behaviour has played a role in the onset of the child's weight faltering or whether the parent's behaviour is a response to the child's difficult behaviour or lack of engagement in the meal.

It appears that the child's behaviour and specifically their communication, engagement and cues to the mother during feeding are important factors that need to be considered

when looking at the parent-child interaction, with regards to feeding difficulties. As there is no standardised measure of children's behaviour with regards to their mealtime communication and cues to the caregiver, a new system of coding the child's interactive behaviour during mealtimes (the CIMB scale) has been developed in a research group headed by Professor Charlotte Wright, PEACH unit, Glasgow University. The CIMB scale looks at the behaviour of the child during mealtimes, focusing on behaviours thought to indicate to the caregiver their readiness to be fed. In order to do this the mealtime had to be split into distinct interactions. This was done by identifying a feeding event and then focusing on the behaviour of the child immediately preceding the offer of food from the caregiver. It then ends when the child responds by for example, accepting or rejecting the food. The CIMB scale was developed and reliability checked on a small number of observations of videoed mealtimes using the mealtime videos collected in the Gateshead Millennium Baby study (Hughes, unpublished). The CIMB scale requires further investigation to validate it as a useful clinical and research tool. To be useful clinically and in research, the coding system needs to be proven to find a difference between children who are weight faltering or who have clinically apparent feeding difficulties and normally developing children.

Aims and hypotheses

Study one aimed to explore the discriminant validity of the CIMB coding system by testing whether it differentiated between weight faltering and control children depicted in videos of mealtime interaction from the GMBS cohort study. The hypothesis was that weight faltering children would display fewer behaviours indicating readiness to be fed than control children.

Study two aimed to further validate the observation measure as a usable and describable clinical tool by using it to assess videos from a clinical group of children with disordered eating and comparing these with the control group above.

It was hypothesised that the clinical sample would produce fewer behaviours indicating readiness to be fed and a greater number of food aversion behaviours than the control group and that any difference between cases and controls found in the GMBS infants would be more pronounced in a clinical sample.

Methods

Design

Study one used a nested case control design. This is an effective and efficient way of studying all cases within a cohort and a representative control group from within the same population. (Hennekans, Buring & Mayrent, 1987). The second part of the study used a non-blinded cross-sectional comparison between the controls in the Gateshead Millennium Baby Study (GMBS) and clinical cases recruited from Royal Hospital for Sick Children (RHSC), Glasgow.

Participants

Study One

Study one utilised data previously collected as part of the GMBS. The GMBS included a cohort of 1029 infants recruited shortly after birth in 1999 – 2000 and who were then followed prospectively. Within this cohort a nested case-control group was identified comprising all incident cases of weight faltering identified in the cohort (below the 5^{th} percentile for weight gain) and a 10% systematic sample of the remaining GMBS cohort as controls (all with weight gain $>10^{th}$ percentile), 30 cases and 57 controls agreed to be studied (Parkinson et al., 2004). Each parent-child dyad was filmed during two mealtimes; children were aged between 13 and 24 months. One meal consisted of food which required spoon feeding, the other meal consisted of finger foods. For study one, the spoon fed videos were used for all the weight faltering children. The control videos had previously been randomly divided in half with one half used in the initial development of the scale and the other half for the current study.

Study Two

Children and their parents were recruited for the clinical group if they had been patients at the feeding clinic at the RHSC, Glasgow between 2005 and 2010 and identified as having 'disordered eating'. Criteria for acceptance by the feeding clinic includes: the child is physically able to eat but is not eating and that the child is either suffering significant weight faltering or is reliant on artificial feeding. As part of the child's intervention at the feeding clinic it is common for a mealtime video to be taken. To be included the child must have had a mealtime video taken when they were between the ages of 9 months and 30 months. An information sheet and consent form was sent to the parents/guardians of the eligible participants. Parents who did not respond to the letter within one month were followed up with a phone call from a member of the feeding clinic team. The control group for study two consisted of the controls from the GMBS used in study one.

Procedures

The primary investigator (PI) was given training in the use of the CIMB scale by the tool developer (Patrick Hughes). Coding of the GMBS videos did not take place until the PI reached a 0.70 – 0.80 rate of concordance with the tool developer on 5 videos used in the development of the measure. The spoon fed meals from the GMBS videos were coded blind to group.

Parents/Guardians of eligible children from the available clinical population were sent a cover letter (Appendix 3.2 & 3.3) and an information sheet (Appendix 3.4) and asked to give consent (Appendix 3.5) to their child's video being included in the study. Once consent was obtained, the clinical videos were coded using the CIMB scale. A second

rater was trained in the use of the CIMB scale by the PI, and then inter-rater reliability was assessed with the first rater (PI). The PI also re-coded 5 clinical videos so as to obtain test-retest reliability.

Un-blinding and analysis of the data did not take place until the clinical videos had been coded so as to minimise bias coding; if study one data were analysed before the clinical videos were coded and specific behaviours were found to discriminate between cases and controls, it could have biased the coding of the clinical tapes.

The Children's Interactive Mealtime Behaviour (CIMB) Scale

This is an all events coding scheme applied by watching the video in real time (see Appendix 3.1 for coding manual). Three aspects are coded: child behaviour, feeding event and child location. These codes are recorded every time the parent offers food irrespective of the outcome of the offer. The child behaviour category is coded by giving a score of 0, 1 or 2 depending on the actions of the child's head, eyes, mouth and hands. The outcomes or feeding events are recorded and coded as; accepts food, refuses food, rejects food (child spits the food out after accepting or feeding them self), withdraw (parent withdraws food before child reacts to the offer), feeds self and miss (child fails to get food into their mouth after a feeds self). Table 1 gives details of when each of these codes would be rewarded. Available socio-economic information and diagnosis were also recorded where available.

INSERT TABLE 1 HERE

When developing the CIMB scale, half of the control videos (N=28) from the GMBS were used. After the development of the initial coding scheme the test-retest and inter-rater reliabilities were tested and a revised version of the coding system was developed in which low frequency codes were removed or collapsed into other codes. This revised system was then applied to 5 other control videos and test-retest and inter-rater reliabilities calculated. The Cohen's Kappa for repeatability on child location was 0.94 for feeding event 0.91 and for child behaviour 0.47. The Cohen's Kappa for inter-rater reliability on child location was 0.66, for feeding event it was 0.86 and for child behaviour it was 0.12 (Hughes, P., unpublished). Inter-rater reliability on the child behaviour category was low, but was thought that this was because the second rater was not trained in the use of the coding system and coded purely through the instructions in the manual, with no opportunity for reliability or threshold training.

Prior to commencing coding of the study videos, the PI coded 5 of the videos used in the development of the tool which had previously been coded by the tool developer. Concordance rates were calculated for feeding events (0.91), head (0.70), eyes (0.72), mouth (0.85) and hands (0.80). Inter-rater and test-retest reliabilities were tested using 5 randomly selected videos. Test-retest rates were calculated as: feeding events (0.89), head (0.74), eyes (0.81), mouth (0.78) and hands (0.83). Inter-rater reliability rates were calculated as: feeding events (0.78), head (0.76), eyes (0.74), mouth (0.67) and hands (0.78).

Outcomes

From the CIMB scale the score for each interaction was calculated, resulting in a score between 0 and 8, lower scores indicated less engagement in the meal. The sum of all the

interactions in a meal yielded a total mealtime score and from this a mean interaction score for the meal was calculated by dividing the total mealtime score by the number of interactions, which controls for the fact that the duration of the meals varies in length. A total score for head, eyes, mouth and hands over the duration of the meal was also calculated and again a mean score for each was calculated. The meal duration and the number of feeding events were recorded. As the feeding event does not always involve an interaction between the parent and the child, as is the case for most self feeding, the number of interactions was recorded and the number of feeding events that did not involve an interaction (child attempts to feed self) was also recorded. The position for the majority of the meal was recorded.

Justification of sample size

Due to the exploratory nature of the study it was difficult to predict what effect size would be expected, therefore in order to calculate power, effect sizes were based on a study by Sanders et al. (1993) who used an observational coding system to examine appropriate and disruptive feeding behaviour in children with feeding problems. Using the means of overall disruptive behaviour (problem eaters mean 46.39, SD 24.25; non-problem eaters mean 18.16, SD 17.36) the effect size was calculated as large. The power calculator G*power (Faul, Erdfelder, Lang & Buchner, 2007) was used to establish what power would be expected with 30 cases and 29 controls in study one and 15 clinical cases and 29 controls in study two. With the effect size set at ‘large’ and based on a two-tailed t test for independent groups, it was expected that power of 0.86 would be obtained in study one and 0.69 in study two.

Analysis

Data was entered into SPSS. Descriptive and inferential statistics were used to analyse the data gathered. The data were tested for normality and non- parametric tests conducted when required. An independent samples t-test (or Mann-Whitney U test) were used to ascertain whether there was a significant difference on scores between weight faltering cases, clinical case and controls. There was also further exploration of properties of the tool using logistic regression to ascertain whether the behaviour of the child during the interaction predicted whether the child ate or not.

Ethics

Prior to commencing the study ethical approval was given by the West of Scotland Research Ethics Committee (Appendix 3.7).

Results

Study One

Participants in study one consisted of 30 weight faltering cases (mean age 15.80 months) and 29 controls (mean age 15.26 months). No significant difference between the ages of the control group and the cases was found, $t(57)=1.46$, $p=0.15$. As previously reported by Parkinson et al. (2004), cases and controls did not differ in social or economic circumstances, except that children with FTT were more likely to be second born or later.

Case and control mean scores and median scores on the meal duration, total feeding events, total interactions and total events with no interaction can be found in Table 2. A Kolmogorov-Smirnov test was conducted on all the data to ascertain whether it was normally distributed. All of the variables displayed in Table 2 were normally distributed with the exception of the numbers of events with no interaction. Therefore a Mann-Whitney U test was conducted on the latter variable only. As shown in Table 2, three independent samples t-tests and one Mann Whitney U test found no differences between cases and controls in meal duration, total events, total interactions or number of events with no interaction.

INSERT TABLE 2 HERE

The hypothesis that weight faltering children would display fewer behaviours indicating engagement in the meal was tested by examining between group differences in the mean score for the meal and mean score for head, eyes, hands and mouth. As can be seen in Table 3 the mean scores in both groups were very similar and independent sample t-tests showed no significant differences between cases and controls.

Non-parametric methods were used on the outcome data as it was found not to be normally distributed. Table 4 shows the means and medians for the cases and controls on each outcome. Seven Mann-Whitney U tests showed that none of the outcome scores differed significantly between the cases and controls.

INSERT TABLES 3 AND 4 HERE

Study Two

For study two 13 out of 26 families consented to participate. Of the 13 non-participating families, 10 did not respond to the request, 2 of the children were with foster carers and did not have authority to consent and 1 refused to consent. In addition, in the group that consented to participate, one of the child's videos could not be accessed so that study two consisted of 12 clinical cases (mean age 19.08 months) made up of parent-child dyads recruited through the feeding clinic at RHSC, Glasgow and 29 controls (mean age 15.26 months) made up of parent-child dyads from the GMBS. The clinical group were significantly older than the control group ($t(39)=-3.54$, $p=0.001$). Of the 12 children in the clinical group 4 were part fed by Naso-gastric and 2 by gastostromy feeding, 1 by supplements, and 5 had normal diets. Out of the 12 children, 3 had some neurological impairment. Only one child had a diagnosis of simple weight faltering. The other

children had a range of conditions recorded as their main diagnosis; Congenital Heart Disease, Down's syndrome, Cardiomyopathy, problems of prematurity (2) Chronic lung, Gastroesophageal reflux (2), Diaphragmatic Hernia and Cleft Lip/Palate.

Table 2 shows the mean and median scores for the clinical group on the meal duration, total feeding events, total interactions and total events with no interaction, all except events with no interaction were normally distributed. The clinical group's meals were significantly longer than the control group meals. As with the sample from the GMBS the mean score for the meal and the mean score for head, eyes, mouth and hands were examined, all of these variables were found to be normally distributed. As can be seen in Table 3 the mean score for mouth was significantly different between clinical cases and controls but none of the other mean scores were found to differ significantly. Both these significant results were found at the 0.05 criterion for significance, however, given the number of comparisons performed a Bonferroni correction was used, after which the clinical group's meals were not significantly longer than the control group meals at the 0.006 criterion for significance and the mean score for mouth was no longer significantly different at the 0.005 criterion for significance. It would have been appropriate to control for multiple comparisons on all other tests, however, this is redundant given no other significant results were found. Table 4 shows the mean and median scores from the feeding outcomes in each group. These variables were not normally distributed; therefore, a Mann-Whitney U test was performed. It can be seen that the clinical group accepted less food, fed themselves less and rejected the food more; however, none of these differences reached statistical significance.

Individual-Interaction Analysis

Study One

The individual interactions (N=2216) were used to examine whether the outcome (child eats or not) was predicted by the score of the child's head, eyes, mouth and hands action's prior to the offer of food. Table 5 suggests that each element tends to predict eating, but that often no cueing behaviour still resulted in the child eating.

INSERT TABLE 5 HERE

In order to examine this further, logistic regressions were performed with the participant identification number entered as a factor variable which takes into account variability within individuals. After subject was controlled for the sum of the interaction was associated with the child eating. As were the individual head, eyes, mouth and hands actions (Table 6). When all the predictors are entered together, head and mouth were still significantly associated with eating and the odds ratio for head increased. However, the odds ratio for eyes was then below zero. This would suggest this dimension did not add any more weight to the prediction of whether the child's behaviour would result in the child eating once the head position was known.

Study Two

As with the community sample logistic regressions were performed on each interaction in the clinical data. From the 12 participants there were 387 interactions, the number of interactions per child ranged from 1 to 83 (mean 38.50). Again the score on the interactions did significantly predict eating but the group did not (Table 6). The clinical sample showed very similar results to the community sample, except that the position of

the head seemed to be more dominant in the clinical sample as indicated by the high odds ratios seen in the adjusted logistic regressions.

INSERT TABLE 6 HERE

Discussion

It was hypothesised that the weight faltering children would display fewer behaviours indicating readiness to be fed than the control children, but in fact the CIMB scale did not discriminate between the two groups in the cohort sample or the clinical sample and in fact all three groups showed striking similarity.

The interaction scores and individual elements (head, eyes, mouth and hands) were predictive of whether an individual interaction resulted in something being eaten (opposed to refused or spat out). However, scores indicating non-engagement and no cueing behaviour still tended to result in the child eating a large percentage of the time.

Previous Research

A number of previous studies have found differences in mealtime interactions. Children with feeding difficulties displayed more difficult behaviour and fewer vocal cues (MacPhee and Schneider, 1996) and had less adaptive ways of communicating their needs during meals (Mathisen et al., 1989). However, both of these studies had only small numbers recruited from inpatient wards therefore, participants are likely to have been selected for other feeding or social difficulties. In addition, unlike the CIMB scale, the measures used did not micro analyse the interaction, they gave a more general view of the child's behaviour. It may be the case that subtle cueing and responding to cues occurs between the parent and child which are missed when the meal is broken down and a series of feeding events observed as individual events.

Little previous research has focused solely on the child's behaviour. A study that examined the interaction between parents and their child with NOFTT children or comparison group (Hutcheson, Black & Starr, 1993) found few differences during mealtimes. However, again these results must be generalised with caution as the sample were a referred sample. However, Skuse, Wolke, & Reilly (1992) also found no differences in the interactions between FTT children and their parents and thriving children and their parents when participants were identified by whole population screening.

Some studies have investigated the parent's ability to respond to cues and MacPhee and Schneider (1996) found that the mothers of NOFTT children ignored the child's cues more than mothers of thriving children, while Drotar, Eckerle, Satola, Pallotta, & Wyatt (1990) found that mothers of children with failure to thrive terminated the meal in a more arbitrary manner. This might suggest a lack of reading or responding to child's cues indicating engagement in the feeding situation. However, this study also found no differences in the mother's Flexibility of Timing and Sensitivity during the meal. The current finding must also be considered in the context of the earlier analysis of the same videos by Joanne Robertson (Clinical Psychology Doctorate Trainee at Glasgow University, 2007) and Wright, Robertson, Puckering and Parkinson (submitted 2010) which found that in the same videos mothers of failing to thrive children displayed less sensitivity.

Strengths and Limitations

The participants in study one were recruited from a population based cohort study and although the cases were defined only as mild to moderate weight faltering they were

free from the referral bias often seen in studies involving children who are weight faltering. These videos had already been analysed twice before and might not be wholly representative. However in contrast, in study two, where the sample is highly atypical little difference in actions was found from the GMBS sample.

The CIMB was designed to assess behaviour of the child objectively during feeding interactions. A child's mealtime tends to be one long sequence involving to and fro between the parent and the child. In order to analyse the meal in detail a 'feeding interaction' had to be defined. In doing this the CIMB scale focused solely on the child's behaviour just before the offer of food is made. This may prevent a more global overview of the mealtime interaction. It is not possible to know from this measure whether there are cues occurring that the parent is ignoring or not responding to. It also fails to assess the emotional tone of the meal. A review by Mentro, Steward and Garvin (2002) aimed to clarify the concept of infant responsiveness. They stated that child responsiveness during mealtimes was part of a reciprocal process and that "it is essential that a consistent caregiver be present who is both sensitive to the infant and attentive of his or her needs" (p213). Mentro et al. (2002) also highlighted the importance that the child was able to send clear, positive behavioural cues to the parent, which they suggested acted as positive reinforcement to the parent and promoted synchrony between the parent and child during the feeding process. The CIMB looked at the behavioural cues, but did not take into account the behaviour of the parent and did not measure the child's behaviour in relation to the mother. It could not therefore, be said that the CIMB scale measured the responsiveness of the child during feeding and may be measuring only part of a larger picture.

In study one, videos were coded blind to group, however, it was not possible to code the clinical sample in study two blind. In addition, further limitations of the videos were that study one videos were not recorded for the purpose of assessing interaction, the meals were all standardised and therefore not a natural representation of the child's normal meal. Again, these differences did not appear to affect the results as highlighted by the similar finding between the two groups.

Through power calculations it was established that study one is moderately powered to detect a large effect size. However, a larger sample size would be required to ascertain whether more subtle difference between the groups has been missed. It would appear that the smaller number of participants in study two have resulted in this part of the study being underpowered. However, as similar results were found in the two parts of the study, this suggests that a large effect in this group would not be expected. The large number of individual interactions would suggest that the individual-interaction analysis was highly powered.

The mean scores, irrespective of group, appeared to indicate a degree of neutrality of the child towards the feeding situation. The PI observed that during the meal a number of children would be engaged in other activities, or were distracted away from the food by for example, watching the television or by other people in the room. It was also noted that few of the parents tried to engage their child during the meal, a lack of engagement in the meal may be due to a lack of stimulation from the feeding experience.

Future Research/Implications

As the CIMB scale was not found to discriminate between children who were weight faltering and controls, there does not appear to be a future clinical use for this tool. It may be that a measure looking at the more global picture of the child's behaviour during the meal may be more clinically informative. Although the tool is not useful clinically the findings are informative for this field of study. It adds weight to previous findings that the child's engagement in the meal is not a factor in the breakdown of the mealtime interaction. However, it must be acknowledged that this was a micro analysis of the mealtime and that other factors, other than the child's engagement in the food may be influencing the interaction and should be further examined.

Conclusion

Discriminant validity of the CIMB scale was not confirmed and implies that cueing behaviour is not a factor that negatively affects the parent-child interaction during mealtimes. Although it was found that engaging the head of the child increased the chance that the child would eat, the results also showed that children would often eat when they did not appear engaged in the feeding process. This may indicate that eating is routine activity in which children engage in automatically.

Key Points

- The CIMB scale does not discriminate between children who are weight-faltering or who have a feeding difficulties and thriving infants.
- Children who are facing the food during mealtimes have an increased chance of eating.
- Children will often eat even when they do not appear engaged in the feeding process.

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Table 1: Guide to CIMB scale scoring criteria

	2	1	0
Head	Turning to face food; leaning towards food.	Neutral; turning back and forth.	Facing away from food.
Eyes	Gaze fixed on food.	Neutral; glancing about.	Gaze fixed on something other than food; looking away.
Mouth	Mouth is wide open before food is brought towards mouth.	Neutral; Closed/relaxed.	Busy; talking/crying/chewing etc.
Hands	Reaching towards/pointing at food; attempting to feedself.	Neutral; Still.	Non-feeding actions: playing with food/toy; reaching towards mother; pushing food away etc.

Table 2

Case, control and clinical group mean scores (standard deviations) and p-values (two tailed t-tests) for the meal duration, total feeding events and total interactions, median score (range) for Events with no Interaction and p-values (Mann Whitney U test preformed)

Group	Meal Duration in minutes	Total Feeding Events	Total Interactions	Events with no Interaction (child feeds self)
	Mean (SD)	Mean (SD)	Mean (SD)	Median (range)
Case (N=30)	13.9 (4.9)	51.8 (20.1)	35.80 (23.75)	8 (53)
Control (N=29)	15.2 (3.7)	54.10 (16.49)	39.48(22.4)	11 (61)
P values (t or U) Case vs. Control	0.28 (-1.10)	0.63 (-0.48)	0.54 (-0.61)	0.56 (U=397) Mann Whitney U test
Clinical Group (N=12)	20.6 (10.9)	51.33 (27.52)	38.50 (29.35)	2 (55)
P values (t or U values) Clinical vs. Control	0.02* (-2.40)	0.69 (0.40)	0.91 (0.12)	0.51 (U=228.5) Mann Whitney U test

*=$p<0.05$ (not significant when corrected for multiple comparisons using bonferroni correction $p<0.006$)

Table 3
Case, control and clinical group mean scores (standard deviations) and p-values (two tailed t-tests) for Child Behaviour Means

Group	Mean Score for the meal Mean (SD)	Mean Head Score Mean (SD)	Mean Score Eyes Mean (SD)	Mean Score Mouth Mean (SD)	Mean Score Hands Mean (SD)
Case (N=30)	3.74 (1.13)	1.22 (0.44)	1.05 (0.52)	0.72 (0.19)	0.76 (0.34)
Control (N=29)	3.75 (0.92)	1.16 (0.34)	1.02 (0.36)	0.70 (0.20)	0.87 (0.27)
P (t) t-test Case vs. control	0.98 (-0.03)	0.56 (0.59)	0.78 (0.29)	0.78 (0.29)	0.15 (-1.46)
Clinical Group (N=12)	3.79 (2.06)	1.07 (0.75)	1.03(0.75)	0.70 (0.16)	1.02 (0.55)
P (t) t-test Clinical vs. control	0.93 (-0.09)	0.61 (0.52)	0.91 (-0.11)	0.01* (-2.57)	0.25 (-1.16)

*=$p<0.05$ (not significant when corrected for multiple comparisons using bonferroni correction $p<0.006$)

Table 4

Case, control and clinical group median score (range) for feeding outcomes of meal. Mann Whitney U test preformed and p-values given.

Group	Accept	Refuse	Feedself	Miss	Reject	Withdraw	Restrain Head
	Median (range)	Median (range)	Median (range)	Median (range)	Median (range)	Median (range)	Median (range)
Cases (N=30)	20.50 (58)	7 (39)	7.50 (41)	0.50 (11)	0 (7)	0 (4)	0 (0)
Control (N=29)	25 (68)	11 (44)	9 (55)	1 (15)	0 (5)	0 (3)	0 (0)
P (Mann Whitney U) Case vs. control	0.66 (405.50)	0.54 (394.50)	0.83 (421.00)	0.63 (405.50)	0.26 (307.50)	0.21 (368.00)	1.00 (435.00)
Clinical Group (N=12)	15.50 (47)	7 (60)	1 (47)	0(6)	1 (50)	0 (3)	0 (5)
P (Mann Whitney U) Clinical vs. control	0.09 (114.50)	0.56 (153.50)	0.66 (158.00)	0.44 (146.50)	0.06 (109.00)	0.31 (138.00)	0.68 (159.50)

Table 5

Relationship between actions and whether child ate at each offer of food

Values are Number (%) within each action category who ate (as opposed to refuse/ reject/ miss)

	Community Sample (N=30)			Clinical Sample (N=12)		
	0	1	2	0	1	2
Head %	460 57.1%	338 77.3%	708 72.7%	84 39.3%	41 63.1%	74 68.5%
Eyes %	669 63.3%	230 69.7%	607 73.2%	110 46%	20 51.3%	69 63.3
Mouth %	468 60.5%	960 70.6%	78 95.1%	38 40.9%	155 54.6%	6 60%
Hands %	479 60.0%	834 72.8%	193 70.7%	61 47.3%	110 50.5%	28 70.0%

0 = Body part not engaged in feeding or avoiding food

1 = Body part neutral

2 = Body part engaged in feeding or actively seeking food

Table 6

Logistic Regression preformed on the individual interactions for sum of interaction, Group, Head, Eyes, Mouth and Hands, on both the community sample and clinical sample, p-values, odds rations and confidence levels are shown.

		Community Sample (2216 interaction)				Clinical Sample (387 interactions)			
		Sig	Odds Ratio	Confidence Level Lower	Upper	Sig	Odds Ratio	Confidence Level Lower	Upper
Sum of interaction		0.000*	1.184	1.099	1.276	0.000*	1.244	1.126	1.373
Group		0.878	0.966	0.625	1.495	0.092	3.173	0.532	1.049
Adjusted only for subject ID									
Head	2	0.000*	1.996	1.433	1.780	0.000*	3.368	1.827	6.210
	1	0.000*	2.561	1.747	3.753	0.048*	2.644	1.007	6.944
Eyes	2	0.004*	1.586	1.162	2.164	0.012*	2.023	1.166	3.511
	1	0.082	1.334	0.964	1.845	0.384	1.234	0.768	1.983
Mouth	2	0.000*	12.750	4.859	33.455	0.362	2.171	0.410	11.486
	1	0.016*	1.569	1.087	2.265	0.329	1.739	0.572	5.284
Hands	2	0.058	1.607	0.985	2.621	0.023*	2.601	1.140	5.937
	1	0.001*	1.786	1.270	2.511	0.792	1.135	0.443	2.911
Adjusted for all other measures									
Head	2	0.029*	1.945	1.072	3.529	0.000*	18.756	4.494	78.271
	1	0.000*	3.331	2.218	5.004	0.015*	6.415	1.433	28.716
Eyes	2	0.770	0.917	0.514	1.636	0.003*	0.136	0.036	0.509
	1	0.026*	0.633	0.423	0.946	0.028*	0.208	0.051	0.842
Mouth	2	0.000*	10.103	3.939	25.911	0.646	1.445	0.301	6.947
	1	0.027*	1.513	1.049	2.183	0.551	1.373	0.485	3.888
Hands	2	0.452	1.195	0.751	1.900	0.362	1.648	0.563	4.818
	1	0.007*	1.617	1.141	2.290	0.699	1.156	0.554	2.412

*= $p < 0.05$

Chapter 3

Advanced Clinical Practice 1

Reflective Account

(Abstract only)

A reflection on the development of my understanding

of the therapeutic relationship

Lauren Corlett

Submitted in part fulfilment of the requirements

for the degree of Doctorate in Clinical Psychology (D Clin.Psy)

July 2010

Address for correspondence:

Division of Community Based Sciences

Section of Psychological Medicine

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Abstract

The following reflective account is an analysis of an experience I had during a session with a patient. It took place during my placement in an adult Community Mental Health Team (CMHT). The session initially resulted in reflections focusing on my own thoughts and feelings; I then widened my reflection to thinking about the patient's feelings and what I could learn from this experience, so that should a similar circumstance arise again I can act differently. I was then able to develop further and learn from my reflection by having discussions with my supervisor, peers and friends and through further reading. The account describes how through this initial reflection I went on to develop my understanding of the therapeutic relationship and psychodynamic processes. I then highlight literature regarding the connection between the therapy relationship and outcome for patients. Detail is also given on how this knowledge assisted me to address a therapeutic rupture and develop my clinical practice. Personal thoughts, feelings and opinions regarding the development of the therapeutic relationship and the development of clinical practice within the time constraints of the trainee's placement are then discussed.

Chapter 4

Advanced Clinical Practice 2

Reflective Account

(Abstract only)

Clinical Psychologist, not just a therapist: Developing my understanding of the alternative roles of Clinical Psychologists

Lauren Corlett

Submitted in part fulfilment of the requirements

for the degree of Doctorate in Clinical Psychology (D. Clin. Psy.)

July 2010

Address for correspondence:

Division of Community Based Sciences

Section of Psychological Medicine

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G12 0XH

Abstract

As I come to the end of my final year as a Trainee Clinical Psychologist and my qualification now comes into view, I have become much more aware of the competencies and roles, that don't involve direct clinical work, which I will have to develop and take on as a qualified Clinical Psychologist. In my current placement, in a team that works with Looked After and Accommodated Children (LAAC) I have learnt about, and gained insight into, the processes involved in developing and managing service development. I joined this team at a time when they are looking at piloting a new way of working with LAAC and their families. From discussions with team members, experiences of working directly with children and the systems surrounding them, and attending training within the department I have progressively reflected on the way the service is delivered and the prospect of changes to this system. I have also gained some insight into what I need to do to develop my own skills in thinking objectively about the services I work in, the evidence base justifying change to the systems and how I can become involved in making these changes.

Appendices

Appendix *Contents*

Appendix 1.1

The Journal of Child Psychology and Psychiatry

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Top

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Appendix 2.1

Quality Criteria

Title:

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Introduction	
Comprehensive discussion of the literature & aims of the study are clearly stated.	
Total:	**/1**
Design	
Cross sectional	
Comparison group	
matched comparisons	
Total:	**/3**
Sample	
Description of inclusion and/or exclusion criteria included	
Samples are representative	
Criteria for FTT diagnosis described or classification criteria cited.	
Power calculation reported	
Total:	**/4**
Measure of interaction	
Measure of interaction is an observational tool which yields count data	
The measure is well described so that it is reproducible/repeatable.	
Description of validity of measure given.	
Description of reliability of the measure given.	
Total:	**/4**

Procedure	
It is made clear that the raters of the parent-child interaction are blind to cases and comparisons.	
Inter-rater reliability given.	
Information about the coders is given.	
Total:	**/3**
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Data included so that reanalysis of main outcomes could be conducted	
Total:	**/3**
Conclusion	
Conclusions are relevant and justifiable & limitations of the study are discussed.	
Total:	**/1**

Max Score 19
Score

13 – 19 Good

7 – 12 Adequate

6 and below Poor

Appendix 3.1

A coding scheme for behaviours exhibited by young children during feeding.

CODING MANUAL

P. Hughes

Aims of the Coding Manual

The coding scheme that has been developed here aims to **identify behaviours** exhibited by young children during meals that would be expected to be interpreted by parents as an **indication of how interested the infant is in feeding**. Ultimately it would be useful to have a measure of the extent to which the **child signals their interest in food.**

The problem with trying to develop such a scheme is that an infant's mealtime is an extremely complicated, continuous interaction. In order to compare different behaviours within the meal it is necessary to divide it into distinct events that can be analysed separately. If the coding scheme is to be reliable, it is first important to make sure that different coders are observing the same behaviours. To this end the coding manual aims to provide the coder with an explanation of how the meal is divided; enabling him to identify when one event ends and another begins; and explain the reasoning behind it.

Once the coder is comfortable with what he should be observing and when, it is then important to ensure that his interpretations of those behaviours are correct, and consistent with other coders. This is difficult because, at best a coding key can provide examples of commonly observable behaviours, and instructions on how to code them. But as the range of behaviours that could be observed during a meal is substantial, a deeper understanding of what is being measured is required if they are to be coded appropriately.

Therefore, as well as providing instructions on how to code the more common physical actions that are observed, the coding manual also endeavours to explain the theory behind those codes, so that the behaviours not explicitly described in the scheme are still coded correctly and consistently across the board.

A summary of the codes and instructions on using the coding scheme are given at the end of the manual.

The 'Feeding Attempt'

As mentioned, the use of this coding scheme requires that the child's meal be divided into distinct segments that are analysed independently of each other. These sections are *Feeding Attempts*, and are identified by the presence of a *Feeding Event*, which will be described later.

There are two types of *Feeding Attempt*, based on whether the mother feeds the child or the child feeds himself:

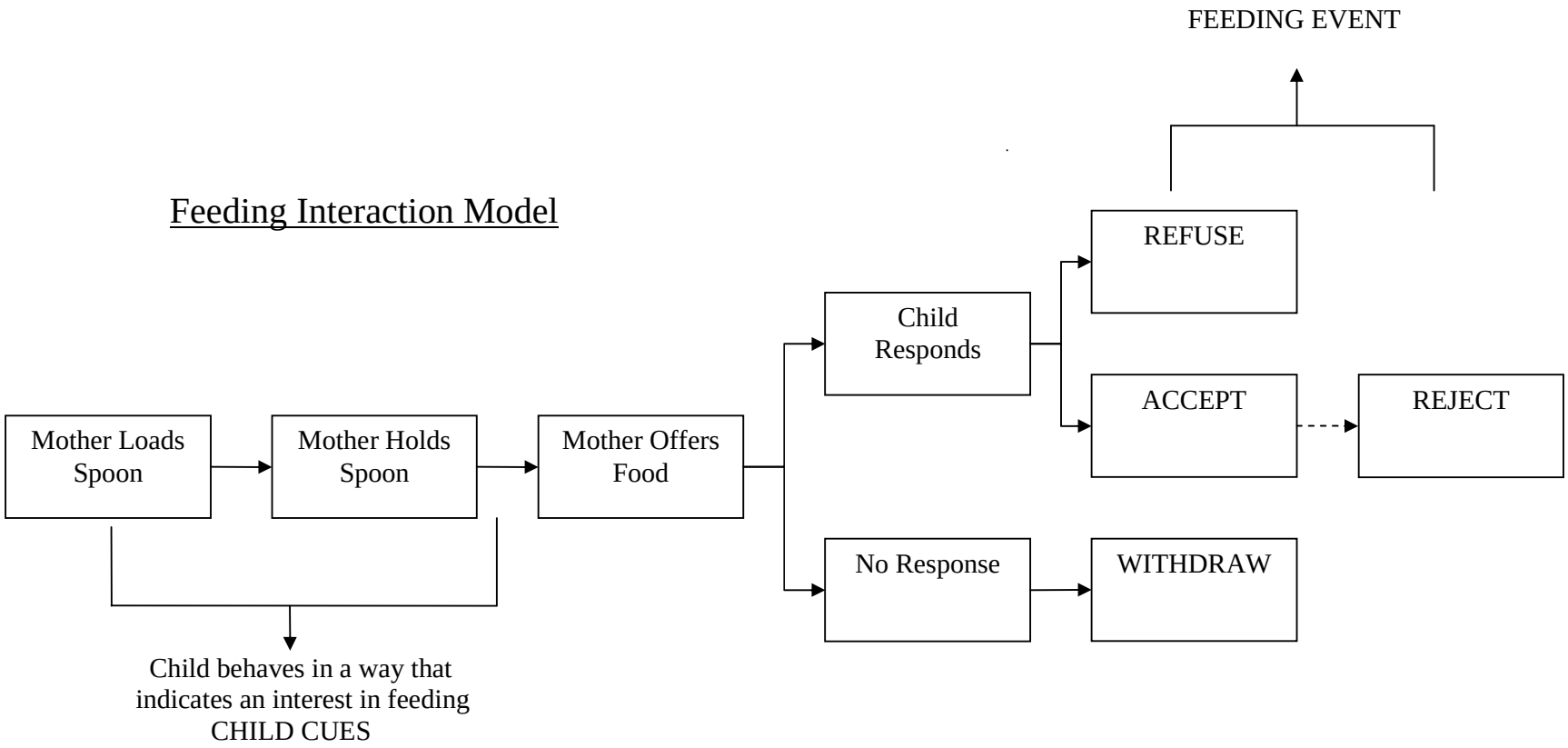
- Feeding Interaction
- Self-feed Attempt

Feeding Interaction

A Feeding Interaction is the actions leading up to and including the offer of food, and the child's response. Each Feeding Interaction begins following the event of the previous one; with the child either deciding to accept, refuse or reject the food, or the feeder withdrawing the food before a decision is made. The new Feeding Interaction then starts with the feeder loading the spoon or holding the **still-loaded spoon ready.**

During the development of the coding scheme it was decided that we were interested in the actions exhibited by the **child immediately prior to the offer of food** from the parent. The thinking being that actions immediately preceding an offer of food could be influencing the parent's decision to offer the food. Therefore, discordance in these behaviours between healthy children and those failing to thrive could provide evidence for the theory that the problem stems from a maladapted feeding behaviours, or even discordance between the mother and child.

To ensure that different coders are observing and coding the same actions it was necessary to define a ‘feeding interaction,’ as well as the components that make it up. In doing this, the Feeding Interactions Model was created.


FEEDING EVENT
Feeding Interaction Model
REFUSE
Child
Responds
ACCEPT
REJECT
Mother Loads
Spoon
Mother Holds
Spoon
Mother Offers
Food
No Response
WITHDRAW
Child behaves in a way that
indicates an interest in feeding
CHILD CUES

The Feeding Interactions Model assumes that after the parent loads the spoon there is a period when they are holding the spoon, waiting, before an offer is made. It is during this waiting period that we are interested in the child's behaviours. As soon as the parent moves from holding the spoon still, towards the child, then a decision has been made on their part to offer the food, and it is the child's actions immediately preceding this decision that are important. Of course all meal times are different and there may be a pause between filling the spoon and the parent offering the food. In this case the behaviour recorded would be the same as above; **the behaviour in the few seconds prior to the parent making the offer of food.**

The feeding event follows the offer of food, where the child will either accept the food, refuse it, or accept it and then spit it out (reject). The parent may also withdraw the food before the child can react.

After the Feeding Event the spoon is returned to the bowl where it is loaded with food – **or returns to a waiting position if it still contains food – and the next feeding interaction begins.**

Self-feed Attempt

During the course of a meal, there may be occasions when the child feeds himself**. If, in doing this there is no interaction with the mother, the child's behaviours are irrelevant (with the exception of the act of feeding itself) and are ignored.**

The *feeding event* however is no less important and is recorded, as is the child's location.

However, if in the process of feeding themselves the child interacts with the mother indicating to the mother an interest in feeding, this behaviour should be coded. For example the child may indicate to the mother that they wish the mother to fill the spoon before taking the spoon and feeding them self.

The Coding Scheme

The coding scheme is composed of three categories:

- Feeding Event
- Child's Behaviour
- Child's Location

In the following section definitions are given for the codes, and the theory behind them is explained.

Feeding Event

The feeding event codes used are abbreviated from a coding scheme developed by Parkinson and Drewett.

As the only identifiable 'event,' the feeding event *defines* each feeding attempt, and the transient 'states' of the child, i.e. behaviour and location, are observed in relation to it. Also, as the only 'event,' the time of the feeding event is recorded to identify the feeding attempt so it can be tested for repeatability.

Finally, some feeding event codes will define a feeding interaction and some will define a self-feed attempt. The feeding events: *Accept*, *Refuse* and *Withdraw*, always follow an offer of food from the mother, and are therefore part of a feeding interaction. Consequently they should always be accompanied by codes for the *Child's Behaviours.* The *Feedself* and *Miss* events, however, do not **always** involve an interaction with the mother and in which case the *Child's Behaviours* need not be coded.

A *Reject* code may follow an offer from the mother or an attempted self-feed. If an interaction took place the *Child's Behaviours* should be coded.

Feeding Event Codes

Accept	Accepts food from spoon/mother's hand directly into mouth
Refuse	Child refuses to open mouth or closes mouth as food approaches and before it is fully in mouth and/or turns head away, arches back, pushes spoon away, covers mouth
Reject	Child spits out food after *accept* or *feedself*
Withdraw	Parent withdraws food before child reacts to offer of food
Feedself	Child grasps food/spoon and brings it towards mouth (assumes child is successful in getting some food into mouth)
Miss	Child fails to get any food into mouth in an attempt to self feed

Archetypal Examples of Feeding Events

Most of the feeding event codes are quite easy to use, but the *Feedself* and *Miss* codes can be more problematic as they can manifest in several different ways. Examples of each are provided below as well as examples of behaviours that should not be coded.

Feedself

Code:

- The child loads the spoon himself and successfully gets some food in his mouth.
- The mother loads the spoon, hands it to the child, and the child successfully gets some food in his mouth.
- The mother loads the spoon; mother and child both hold onto the spoon and successfully get some food in the child's mouth.

- There is at least half a spoonful of food remaining on the spoon following the previous feeding attempt and the child successfully gets some food in his mouth.
- The child picks up a significant amount of food (i.e. visible in his hand; equivalent to a spoonful) and successfully gets some in his mouth.
- The child picks up the bowl/yoghurt pot etc, holds directly to mouth and can be observed getting some food into his mouth.

Don't code:

- No attempt is made by the child to load an empty spoon before bringing it to his mouth.
- The child puts his hands in the food and only licks his fingers.
- The child picks up an insignificant amount of food (i.e. not visible in his hand) from the bowl, fallen food on the table or his person and puts it in his mouth.
- The child picks up the bowl/yoghurt pot etc, holds directly to mouth but cannot be observed getting food in his mouth.

Note: On these occasions no feeding event is coded and the actions are essentially ignored as no feeding attempt was made.

Miss

- Food is successfully loaded on the spoon but the food falls off the spoon before it reaches the mouth.
- Food is successfully loaded on the spoon and enters the mouth but the food remains on the spoon.
- An unsuccessful attempt is made to load the spoon, and the empty spoon enters the mouth.

Refuse

It is also worth noting that coding a refuse, may also prove problematic as it can be difficult to distinguish when one feeding interaction ends and the next begins. When the child accepts the food it is most likely that the mother must then return the spoon to the bowl at which point the next interaction commences. When a child refuses the offer of food the mother does not have to return the spoon to the bowl, therefore, the feeding interaction ends when the mother withdraws the spoon to a waiting position, at this point the next feeding interaction begins. It is not uncommon to see a parent follow the child's turning head with the spoon when the child refuses an offer. Unless the mother withdraws the spoon, even slightly and pauses it is coded as one interaction.

Child's Behaviour

From observations of infant's mealtime behaviour, four body parts were identified as being the most descriptive and distinguishable: the head, eyes, mouth and hands. Actions from these body parts ranged from turning away from the food and covering mouth, to stretching towards the food; back arched and mouth wide open.

Each body part should be scored from 0 to 2 for each feeding interaction, with each category following a basic frame:

2 **Actively seeking food**

1 **Neutral; sitting comfortably; content in the meal situation**

0 **Uninterested; actively avoiding food**

Child's Behaviour codes

Head	**2**	Turning to face food; leaning towards food
	1	Neutral; turning back and forth
	0	Facing away from food
Eyes	**2**	Gaze fixed on food
	1	Neutral; glancing about
	0	Gaze fixed on something other than food; looking away
Mouth	**2**	Mouth is wide open before food is brought towards mouth
	1	Neutral; Closed/relaxed
	0	Busy; talking/crying/chewing etc.
Hands	**2**	Reaching towards/pointing at food; attempting to feedself
	1	Neutral; Still
	0	Non-feeding actions: playing with food/toy; reaching towards mother; pushing food away etc.

Archetypal Examples of Child's Behaviours

The following examples are intended to enhance the understanding of each of the behavioural codes. The table above is useful as it gives a brief description of the behaviours that can be seen and how to code them, but the list of potential actions that could be exhibited by the child is substantial and therefore it is important that the individual can make informed judgments about how to code the less obvious behaviours. Understanding of the basic frame and reading the following examples will help ensure the ethos of the code is maintained from coder to coder. **Remember, the aim is to identify behaviour that indicates the child's interest in, or aversion to eating.**

Head

Code a TWO

When the child is sitting comfortably in his high chair and his mother is sitting to his left attempting to feed him. The food therefore is being presented from the left, not from the front. In this situation, if the child turns to actively face the food during the meal, and is facing this way immediately prior to the offer of food then for this interaction the head is coded as **2**.

ONE

If the child were content to continue facing roughly forward while being fed, though his head may turn back and forward looking around the room, then the behaviour would be coded as a **1**.

ZERO

When the child has his head turned away from the food as far as possible prior to the offer of food, this is quite obviously coded as **0**. However, if the child were constantly facing a television positioned straight ahead and slightly to the right this too would be coded as **0**; the child has turned his head (however slightly) to face something else in the room.

Eyes

Code a TWO

When the child has his eyes fixed on the spoon of food being presented, prior to the offer. If a child attempting to self-feed has his eyes fixed on the bowl of food, and may completely ignore the spoon being offered by the mother. In this situation the eyes should be coded **2**. Though the child is not interested in being fed by the mother, coding this behaviour as **2** will distinguish between healthy feeding behaviours (wanting to self-feed), and feeding behaviours exhibited by those who have no desire to feed at all, even though the feeding event would probably be the same.

The essential point to remember when coding the eyes is that, when the eyes are focussed on the food it is coded as 2

Code a ONE

If the child's gaze is constantly moving from the feeder and the food to his surroundings, or if the child is staring vacantly into middle distance while being fed, then the eyes should be coded as **1**.

Code a ZERO

When eyes are focussed on something other than the food. For example, in a situation where the child is watching television when the offer of food is made, or if his eyes are fixed **on the parent**.

Mouth

It has been mentioned already that timing is crucial when one is coding the child's behaviours. This is particularly important when coding the mouth, as it can often be difficult to distinguish between an open mouth as a signal that the child wants to be fed, and a mouth that is open to accept an offer of food. To reiterate the purpose of coding these behaviours; **we are looking for actions or signals from the child that could be influencing or even triggering the decision by the parent to offer the food**.

Code a TWO

If the child's mouth is wide open immediately prior to the parent moving from a state of holding the spoon still, waiting, to a state where they are moving the spoon towards the child's mouth, then for this feeding interaction the mouth should be coded as **2**.

Code a ONE

If the mouth is resting or closed before the offer is made (as will often be the case) it should be coded as **1**.

Code ZERO

If the mouth is pre-occupied when the offer of food is made (e.g. talking, crying, chewing, drinking from cup etc.), or if the child's hands are covering the mouth then it is coded as **0**.

Hands

Code a TWO

If the child is pointing at the loaded spoon held by the mother A child attempting to feed-self should be clear, as he will be trying to load a spoon with food and bring it to his mouth, or pick food up directly with his hands. This should be coded as **2**. Though this behaviour demonstrates the child to be resistant to being fed by his mother, a code of **2** indicates an overall desire to feed.

Code ONE

If the hands are still when the parent makes the offer of food or if hands are moving in a way that indicated there is not purpose to the movement. The child's hand resting in the food should be coded as **1**, as with a still hand in any location.

Code ZERO

Only when the hands are exhibiting 'non-feeding behaviours' that. An obvious example of this might be the child playing with a toy or car while the mother is attempting to feed him. Less obvious might be the child reaching up towards his mother looking for affection.

The child playing with his food can be difficult to gauge and merits special mention here as it may be confused with an attempt to self-feed. Identifying a child trying to self-feed should be based on evidence that the child is attempting to pick up or load a spoon with food and bring it to his mouth, as well as drawing on information from the child's actions in previous interactions.

Violent or disruptive actions towards the food should obviously be coded **0**, as should any instance when the hand is touching the food or bowl and moving it around without making any attempt to feed.

Child's Location

In addition to the child's behaviours and the feeding events it was also the intention of this study to record the child's location during the meal. Findings by Parkinson et al had shown that children who were failing-to-thrive were significantly less likely to remain in their highchairs throughout a meal. To investigate this further the coding scheme incorporated four Child's Location codes:

- Seated in a highchair
- Seated on a child's seat
- Seated on the parent's lap
- Standing/walking/crawling etc

Child's Location is coded per *Feeding Attempt*, rather than per meal as was done in the previous study.

Restrains Head/Mouth

In addition to the three categories described above, a checkbox has been provided for each Feeding Attempt to code **Restrains Head/Mouth.** Despite being fairly uncommon, it is an indication of force-feeding, and as such is too significant an observation to be excluded.

Video I.D. ____ Pg. _____

Time	: :	Head	Eyes	Mouth	Hands	Accept	
		2	2	2	2	Refuse	
Highchair		1	1	1	1	Reject	
Seat		0	0	0	0	Withdraw	
Lap						Feedself	
Wander						Miss	

Restrains Head/Mouth [ ]

Time	: :	Head	Eyes	Mouth	Hands	Accept	
		2	2	2	2	Refuse	
Highchair		1	1	1	1	Reject	
Seat		0	0	0	0	Withdraw	
Lap						Feedself	
Wander						Miss	

Restrains Head/Mouth [ ]

Time	: :	Head	Eyes	Mouth	Hands	Accept	
		2	2	2	2	Refuse	
Highchair		1	1	1	1	Reject	
Seat		0	0	0	0	Withdraw	
Lap						Feedself	
Wander						Miss	

Restrains Head/Mouth [ ]

Time	: :	Head	Eyes	Mouth	Hands	Accept	
		2	2	2	2	Refuse	
Highchair		1	1	1	1	Reject	
Seat		0	0	0	0	Withdraw	
Lap						Feedself	
Wander						Miss	

Restrains Head/Mouth [ ]

Time	: :	Head	Eyes	Mouth	Hands	Accept	
		2	2	2	2	Refuse	
Highchair		1	1	1	1	Reject	
Seat		0	0	0	0	Withdraw	
Lap						Feedself	
Wander						Miss	

Restrains Head/Mouth [ ]

Time	: :	Head	Eyes	Mouth	Hands	Accept	
		2	2	2	2	Refuse	
Highchair		1	1	1	1	Reject	
Seat		0	0	0	0	Withdraw	
Lap						Feedself	
Wander						Miss	

Restrains Head/Mouth [ ]

Appendix 3.2

Feeding clinic header etc

Dear <Insert name>

Here in the feeding clinic we are always trying to find out more about what we do and how we can help children with feeding problems. We are hoping you might be willing to help us in a small way with some of our current research, so that we can help other children with feeding problems in future.

We have a trainee clinical psychologist, Lauren Corlett attached to the clinic and she is doing some research to find out how we can assess and compare the videos we make of children eating. She is doing this research as part of her training on the Doctorate in Clinical Psychology Course at the University of Glasgow.

In order to do this research she needs to view mealtime videos collected on Feeding Clinic patients and we are simply asking your permission for us to use the video we recorded of <insert child's name> eating while s/he was under our care.

It would be much appreciated if you could spare the time to read the enclosed information and return the consent form if you are happy for us to use the video in the study. After that there is nothing else you need to do! If you don't want us to use the video that is fine too, and this won't affect your treatment in any way, but it would be very helpful if you could return the form telling us this.

If you have any questions regarding this research project please do not hesitate to contact either me or Lauren.

Contact details are given in the information sheet enclosed.

Yours sincerely

Dr Charlotte Wright
Professor of Community Child Health /Honorary Consultant Paediatrician

Appendix 3.3

Feeding clinic header etc

Dear <Insert name>

It has now been some time since we needed to see <insert child's name> in the feeding clinic. We hope s/he is continuing to make good progress.

We are hoping you might be willing to help us in a small way with some research we are doing in the feeding clinic so that we can help other children with feeding problems in future.

We have a trainee clinical psychologist, Lauren Corlett attached to the clinic and she is doing some research to find out how we can assess and compare the videos we make of children eating. She is doing this research as part of her training on the Doctorate in Clinical Psychologist Course at the University of Glasgow. In order to do this research she needs to view mealtime videos collected on Feeding Clinic patients and we are simply asking your permission for us to use the video we recorded of <insert child's name> eating while s/he was under our care.

It would be much appreciated if you could spare the time to read the enclosed information and return the consent form if you are happy for us to use the video in the study. After that there is nothing else you need to do! If you don't want us to use the video that is fine too, and this won't affect your treatment in any way, but it would be very helpful if you could return the form telling us this.

If you have any questions regarding this research project please do not hesitate to contact either me or Lauren.

Contact details are given in the information sheet enclosed.

Yours sincerely

Dr Charlotte Wright
Professor of Community Child Health /Honorary Consultant Paediatrician

Appendix 3.4

Development of the Child's Interactive Mealtime Behaviour (CIMB) Scale

Introduction
My name is Lauren Corlett and I am a Trainee Clinical Psychologist. I am writing to invite you to take part in a research project that I am conducting with the Feeding Team, as part of my training to become a Clinical Psychologist. Before you decide, you need to understand why the research is being done and what it would involve for you. Please take time to read the following information carefully. Talk to others about the study if you wish and please feel free to contact me if there is anything you don't understand or would like some more information on.

What is the study about?
My research project is looking at the way in which children and their parents interact during children's mealtimes. My aim is to develop a system of recording the 'signals' children give to their parents by facial expressions and body movements to show they want to eat. Development of the system will allow us to find out whether children with feeding difficulties signal to their parents in different ways to children who do not have such difficulties. The scale will be called the Children's Interactive Mealtime Behaviour scale (the "CIMB" for short). Our aim is to use the CIMB to help assess children's mealtime behaviour before and after receiving treatment for their feeding difficulties.

In conducting this research I plan to use videos of children and their parents interacting at mealtimes that we have already collected at the Feeding Clinic. You may remember that a video was taken of your child at a mealtime when they were receiving treatment from the Feeding Clinic at the Royal Hospital for Sick Children, Glasgow. I would like to use your child's video in my research and relate this to your child's feeding clinic records.

What will happen if I agree to take part?
I will watch the video and use the CIMB scale to record your child's behaviour during the mealtime. I will have to access your child's feeding clinic notes in order to check clinical details. The information that I record for my research will not identify you or your child in any way. All personal information will be stored in accordance with strict data protection laws to preserve the confidentiality of you and your child.

Will my taking part in the study be kept private?

Yes. The only people who will have access to the information collected will be myself and my supervisors within the University of Glasgow (Prof Keith Millar) and at RHSC (Dr Charlotte Wright, Paediatrician and Dr Christine Puckering, Consultant Clinical Psychologist). All videos and personal information will be stored in locked cabinets on RHSC property.

Who will view my child's video?

The only people who need to view the mealtime video of your child are me and my supervisor Dr Christine Puckering, Consultant Clinical Psychologist.

Do I have to take part?

No. Participation in the research project is completely voluntary. Even if you have agreed to take part, you have complete freedom to decide at any time that you no longer wish your child's video to be included in the study and it will be withdrawn immediately at your request. Your child's ongoing and future care will not be affected in any way if you choose not to take part or later decide to withdraw.

What will happen to the results of the study?

Results will be written up and submitted to the University of Glasgow as part of the requirements for my qualification as a clinical psychologist. They will also be written up and submitted for publication in a journal. These reports will not contain any information that could identify you or your child. If you wish to receive information on the results of the study please feel free to contact me after July 2010.

Who has reviewed the study?

The study has been reviewed and deemed ethical by members of staff in the department of psychological medicine, University of Glasgow and by an NHS ethics committee.

What do I do now?

If you wish to consent to your child's video being used in this research project and to your child's feeding clinic records being accessed, please sign the enclosed consent form and return it in the enclosed stamped addressed envelope.

Depending on the age of your child, you may wish to consult with them about whether they agree to their video being included in the project.

Can I find out more?

If you have questions regarding the research project please contact myself, Dr Charlotte Wright, on the numbers below.

Thank you for reading this – please ask any questions if you need to.

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Appendix 3.5

Lauren Corlett
Trainee Clinical Psychologist
Department of Psychological Medicine
Gartnaval Royal Hospital
Tel: 07742043086

CONSENT FORM

Title of Project: Development of the Child's Interactive Mealtime Behaviour (CIMB) Scale

Name of Researcher: Lauren Corlett

_____
Name of Child

Please initial box

1. I have read and understand the information sheet for the above study. ☐
2. I understand that taking part is voluntary and that I can decide not to take part at any time without giving any reason and without my child's medical care or legal rights being affected. ☐
3. I agree that my child's feeding clinic mealtime video can be used in the above named research project. ☐
4. I understand that research staff will look at parts of my child's medical notes to collect information needed for this research study and I give permission for them to do so. ☐

_____ _____ _____
Name of Parent/Guardian Date Parent/Guardian's Signature

Appendix 3.6

Major Research Proposal

Discriminant validity of an observational coding system of child behaviour during feeding

Abstract

Many studies have focused on measuring caregiver behaviour during mealtimes with children who are weight faltering and controls. There does not appear to be a measure that describes the mealtime behaviour of the child in any detail. The proposed study plans to further validate a measure of child behaviour at mealtimes, to establish whether it is a practical clinical tool that can be used to measure outcomes of intervention, clinically or in research. This will be done initially by investigating whether the measure discriminates between 30 children who are weight faltering and a control group of 29 children, by applying the measure to videoed mealtimes collected in an earlier study. A second study will then test whether this measure discriminates between a clinical sample of children with disordered feeding and controls.

Introduction

Weight faltering, historically known as failure to thrive, occurs when an infant displays a failure in physical growth and their weight or weight gain (Chatoor, 1997) is significantly below normal. It is known that weight faltering occurs when the infant's energy intake is inadequate and they are therefore, not receiving an adequate number of calories to maintain growth and gain weight (Drewett, Kasese-Hara & Wright, 2002).

However, it is often unclear why these children fail to receive an adequate amount of energy and why they display impaired feeding.

Historically it was thought that poverty and neglect played a role in the onset of weight faltering (Patton & Gardner, 1962). However, more recent research does not support this theory. Blair, Drewett, Emmett, Ness & Emond (2004) analysed prospective data from the Avon Longitudinal Study of Parents and Children (ALSPAC), which included 11 718 children. Of these 11 718 children, 531 infants were found to meet criteria for weight faltering at 9 months. These cases were compared with the remaining 11 187 children, so as to investigate whether there was any association between family socioeconomic factors and failure to thrive, the results found no clear association of poorer growth with higher deprivation.

A number of studies suggest that maladaptive feeding arises, in part, because of dysfunctional relationship patterns between parent and child (Drotar, 1991). Using data collected from a large birth cohort study, the Gateshead Millennium Baby study (GMBS) Wright, Parkinson, & Drewett. (2006a) looked at the influence of feeding behaviour of mother and child on weight gain in weight faltering children and controls and proposed that successful feeding depends on a complex interaction between caregiver and child. They found that parents' reports of the child's appetite at 6 weeks was a significant predictor of weight faltering at 12 months as was the parents' response to the child's food refusal. These results suggested that an intrinsic characteristic of the child (appetite) is predictive of weight faltering and that the maternal handling of the child's refusal of food may also play a role in the development of weight faltering.

Other research supports this theory that weight faltering occurs when there is a breakdown in the feeding relationship between the infant and the caregiver. Studies have suggested a number of ways that the caregiver-infant interaction can breakdown and includes disengagement within the family (Alderette & deGraffenried, 1986), insecure attachment (Ward, Lee & Lipper, 2000) and maternal mental health problems (Wright, Parkinson & Drewett's, 2006b). Research has suggested that there are long-term effects of weight faltering in infancy. It has been suggested that children who weight faltered in infancy can have a delay in social and cognitive development (Chatoor, 1997) although a large meta-analysis found evidence for only slight long term cognitive effects (Corbett and Drewett 2004).

Many of these studies have focused on maternal factors (Dunne, Sneddon, Iwaniec & Stewart, 2007; Blair et al., 2004; Drewett et al., 2004) and maternal behaviour during mealtimes (Wright et al., 2006a; Parkinson, Wright, & Drewett, 2004), in relation to their infants weight faltering. Further to this research an unpublished study by Joanne Robertson (Clinical Psychology Doctorate Trainee at Glasgow University, 2007) adapted the Mellow Parenting coding system (Puckering, Rogers, Mills, Cox & Mattsson-Graff, 1994) to apply to videotaped mealtimes collected within the GMBS cohort study for all incident cases of weight faltering in the cohort and systematically sampled controls. This study looked at the interaction between caregiver and infant. Results suggested that caregivers of control infants had significantly higher levels of sensitivity than caregivers of the case infants. Sensitivity was described as the ability of the caregiver to perceive and respond to signals from the infant. This study determined that differences in feeding interaction could be found between infants who fail to thrive and controls. The Mellow Parenting coding system appears to be helpful in establishing

in what way the caregiver's behaviour is affecting the interaction, but it requires a high level of training to use it reliably and it does not measure infant behaviour.

Although much research now focuses on the parent-child interaction and the breakdown in this interaction as a factor in the development and maintenance of weight faltering and disordered feeding, few studies have ever focussed on the behaviour of the child. Little is know about what behaviour if any plays a role in the breakdown of the interaction. An earlier analysis of the GMBS videos, by Parkinson et al. (2004) who collected the mealtime videos, used a simple coding system which recorded child behaviour; however, this coding system was limited as it only measured whether the child accepted, refused or rejected food or whether they fed them self. It does not look at the interaction with the caregiver, for example the cues the child gives indicating readiness to be fed or disruptive behaviour.

A study by Sanders, Patel, Le Grice and Shepherd (1993) used an observational measure, developed to look at differences in appropriate feeding behaviour and disruptive feeding behaviour in children. They applied this measure to observational mealtime videos of children with persistent feeding problems and non-problem eaters. Their observational measure, the Mealtime Observations Schedule (MOS) was derived from their Family Observation Schedule (Sanders et al., 1993). The MOS was intended to measure children's problem and appropriate feeding behaviours. It was also intended to measure parents' responses and tactics for dealing with the child's mealtime behaviour. It was found that feeding disordered children displayed significantly more disruptive behaviours during mealtimes than non problem eaters. This measure has a large number of categories and looks at a variety of mealtime behaviours including

general disruptive behaviour. It focuses on disordered mealtime behaviour rather than a weight faltering sample, therefore it is not known whether it would discriminate between children who are weight faltering and controls.

Mathisen, Skuse, Wolke & Reilly (1989) had previously suggested that a child's physical and temperamental characteristics may contribute to the development and maintenance of weight faltering. They proposed that immature and abnormal oral-motor behaviour and deficient signalling of needs during feeding could play a role in the maintenance of weight faltering. They compared 9 infants who were failing to thrive to 9 matched comparisons and found that they had less well adapted ways of communicating their needs during mealtimes. Comparison infants gave more unambiguous vocal, gestural or body movement signals to indicate such things as whether they liked or disliked particular foods, wanted to eat faster or slower and whether they were sated or wanted more. This was a very small study which did not use a formal measure to assess feeding behaviours, but it suggests that differences can be found in feeding behaviour between children who are weight faltering and controls. .

These studies by Sanders et al. (1993) and Mathisen et al. (1989) suggest that the child's behaviour and communication with the mother during feeding is an important factor that needs to be considered when looking at the parent-child interaction as a trigger and maintaining factor to feeding difficulties. There does not currently appear to be a standardised measure of the child's behaviour with regards to their mealtime communication with the caregiver. A new system of coding the child's interactive behaviour during mealtimes (the CIMB scale) is under development in a research group headed by Professor Charlotte Wright, PEACH unit, Glasgow University. Initial

development has been undertaken by Patrick Hughes a University of Glasgow, Medical Student. The proposed study aims to further develop the CIMB coding system. The CIMB looks at the behaviour of the child during meal time, focusing on behaviours indicating to the caregiver their readiness to be fed immediately preceding the offer of food. The system has three categories which are observed and a score allocated depending on the child's behaviour. The three categories are feeding event, child location and child behaviour. The child behaviour category looks at whether the child is actively indicating to the parent their readiness to be fed, whether the child is neutral or whether the child is actively avoiding food. The child's behaviour is coded by focusing on the actions of the child's head, eyes, mouth and hands. For example active readiness to be fed is indicated by the child turning to face the food, looking at the food and reaching towards the food. Child neutral is indicated by the child glancing about, mouth closed or still. Child uninterested is indicated by turning away from the food, focusing on something else or actively pushing food away. This coding system has been developed and reliability checked on a small number of observations and requires further investigation to validate it as a useful clinical and research tool. To be useful clinically and in research, the coding system needs to be proven to find a difference between children who are weight faltering or who have clinically apparent feeding difficulties and 'normal' children.

The CIMB system was initially developed through observations of parent-child interaction during videoed mealtimes using the mealtime videos collected in the Gateshead Millennium Baby study. All incident cases of weight faltering were identified in the cohort with a 10% random sample of the remaining GMBS cohort as controls (Parkinson et al., 2004). These subjects and their videos are described in detail

below in the method section. The development of the CIMB system was done using half of the control videos. After the development of the initial coding scheme the repeatability and inter-rater reliability was tested and a revised version of the coding system was developed in which low frequency codes were removed or collapsed into other codes. This revised system was then applied to 5 uncoded control videos and repeatability and inter-rater reliability measured. The Cohen's Kappa for repeatability on child location was .938 for feeding event .911 and for child behaviour .469. The Cohen's Kappa for inter-rater reliability on child location was .658, for feeding event it was .855 and for child behaviour it was.121 (Hughes, P., unpublished). Inter-rater reliability on the child behaviour category was low, but it is thought that this was because the second rater was not trained in the use of the coding system and coded purely through the instructions in the manual, with no opportunity for reliability or threshold training. The proposed study aims to further develop the CIMB system using the rest of the GMBS videos and videos from a clinical sample.

Aims and hypotheses

Study One

Aims:

- To explore the discriminant validity of the CIMB coding system by testing whether it differentiates between weight faltering and control videos from the GMBS cohort study.

Hypotheses

- That weight faltering children will display fewer behaviours indicating readiness to be fed than control children.

Study Two

Aims:

- To further validate the observation measure as a usable and describable clinical tool by using it to assess videos from a clinical group of children with disordered eating and comparing these with the control group above.

Hypotheses

- That the clinical sample will produce fewer behaviours indicating readiness to be fed and a greater number of food aversion behaviours than the control group.
- Any difference between cases and controls found in the GMBS infants will be more pronounced in a clinical sample.

Plan of Investigation

Participants

Study One

The GMBS cohort included 1029 infants recruited shortly after birth and followed prospectively. Within this cohort a nested case-control group was identified comprising all incident cases of weight faltering identified in the cohort (below the 5th percentile for weight gain) and a 10% systematic sample of the remaining GMBS cohort as controls (all with weight gain >10th percentile) and 2/3 agreed to be studied (Parkinson et al., 2004). Each parent-child dyad was filmed when the infants were aged between 13 and 24 months during two separate meals. One meal consisted of food which required spoon feeding, the other meal consisted of finger foods. For study one, the 30 videos from weight faltering children and 29 of the 57 controls (28 have already been used in the scale development phase) will be used.

Study Two

This comprises a clinical sample of children recruited through the feeding clinic at the Royal Hospital for Sick Children, Glasgow. All children who have attended the feeding clinic since 2005, have had a meal time video taken and who meet inclusion criteria will be approached to take part in the study. Parents/guardians of children between the ages of 9-30 months at the time of videoing will be approached to take part in the study. The control group for study two will consist of the 29 controls from the GMBS used in study one.

Measures

- CIMB coding scheme for behaviours exhibited by young children during feeding. This will cover:
    - The child's behaviour prior to the offer of food to the caregiver divided into 3 categories, actively seeking food, neutral (sitting comfortably, content in the meal situation) and uninterested.
    - The outcome of the feeding event - accepts food, refuses food, rejects food after accepted or feeds self, withdraw (parent withdraws food before child reacts to the offer), feeds self and miss (child fails to get food into their mouth after a feeds self).
    - Child's physical position during the meal time. Codes are: Highchair, seat, lap and wandering.

An instruction manual for the coding system has been developed by the tool developer. In addition we will also record:

- Parental socio-demographic data.
- Weights at birth and at the time of the video.

Design

The first stage of the research uses a nested case control design. This is an effective and efficient way of studying all cases within a cohort and a representative control group from within the same population. (Hennekans, Buring & Mayrent, 1987: p156). The investigator will be fully blinded to the caseness of the participants. The second part of the study will use a non-blinded cross-sectional comparison between the controls in the GMBS study and all eligible clinical cases.

Research Procedures

Initially the researcher will be taught how to use the coding system by the tool developer (Patrick Hughes). The manual will be refined as indicated by pilot work. Further reliability of the observation measure will be established by inter-rater reliability being established on 5 control videos which were used in the development of the tool, coded by the tool developer. A concordance of 70-80% will be reached before coding of case and controls begins.

Study One

Data from the videos of the 30 cases and 29 controls spoon fed meals will then be collected using the CIMB coding system; this will be done blind to cases and controls. Analysis of the data will not take place until the clinical videos have been coded. This is to avoid bias in coding. If study one data was analysed and specific behaviours found to discriminate between cases and controls, this may bias the coding of the clinical tapes.

Study Two

Parents/Guardians of the children will be sent information sheets and asked to give consent to their child's video being included in the study. Data will then be collected by applying the coding system to the clinical videos. Dr Christine Puckering (Consultant Clinical Psychologist) will be trained in the use of the coding system and inter-rater reliability will be tested at this stage. The primary investigator will also re code 5 clinical videos so as to obtain test-retest reliability. Data from study one and study 2 will then be analysed using SSPS.

Inclusion and Exclusion Criteria

Participants will be included in the clinical sample if they were between the ages of 9 month and 30 months at the time the video was taken. All children will have been clinical cases at the feeding clinic at the Royal Hospital for Sick Children (RHSC), Glasgow between 2005 and 2009 and therefore have been identified as having 'disordered eating'. Criteria for acceptance by the feeding clinic are that children are physically able to eat but are not eating and either suffering significant weight faltering or are reliant on artificial feeding.

Recruitment

All children who have attended the feeding clinic at RHSC, Glasgow, since 2005 and had a meal time video taken will be approached to take part in the study. An information sheet and consent form with stamped addressed envelope will be sent to the parents/guardians of the eligible participants, a cover letter from Dr Charlotte Wright will also be included. Contact information will be obtained through the team at the feeding clinic. Those who do not respond to the letter will be followed up with a phone call from a member of the feeding clinic team from whom they have previously

received intervention. The purpose of this phone call will be to ensure that families do not have any questions about the study and to ensure the family has received the study information and are not being unfairly excluded from the study.

Justification of sample size

As the current study is an exploratory study of the properties of a new coding system and looking at an area of child behaviour that has not been measured previously it is difficult to predict how large a difference we expect to find between the two groups, therefore effect sizes from previously published studies which look at similar behaviours will be used to justify sample size.

Both parts of the proposed study have access to a limited number of participants. Study one will be utilising the data already collected in the Millennium Baby study, consisting of 30 cases and 29 controls. Study two will seek permission from parents/guardians of children who have disordered feeding and have had videos taken of mealtimes as part of their treatment. There are approximately 30-40 families that will be approached and from these families it is estimated that 50% will take part in the study. Therefore it is predicted that in study two there will be approximately 15-20 clinical cases and 29 controls (from GMBS). As there are no previous studies using this measure it is difficult to predict what the expected effect size would be. Therefore, in order to calculate power, effect sizes have been based on a study in which an observational coding system has been applied to videos of caregiver-infant interaction during mealtimes. Sanders et al (1993) looked at appropriate and disruptive feeding behaviour in children with feeding problems and non-problem eaters. They found a significant difference between problem feeders and non-problem feeders. Using the means of overall disruptive

behaviour (problem eaters mean 46.39, SD 24.25; non-problem eaters mean 18.16, SD 17.36) effect size was calculated as large. The power calculator G*power (Faul, Erdfelder, Lang & Buchner, 2007) was used to establish the power we can expect to find with 30 cases and 29 controls in study one and 15 clinical cases and 29 controls in study two. With the effect size set at large and based on a two-tailed t test looking at means between two independent groups it can be expected that power of 0.86 will be obtained in study one and 0.69 in study two.

Settings and Equipment

Analysis of videos will take place within the Royal Hospital for Sick Children. A TV, video/DVD player will be available. Videos and DVDs are already kept in the RHSC in locked filing cabinets. All videos, DVDs and participant information will be locked in these cabinets when not in use. Headed paper, envelopes and postage will be required for sending out information sheets and consent forms to families. Plain paper and photocopying facilities will also be required for coding sheets.

Data Analysis

Descriptive and inferential statistics will be used to analyse the data gathered. It is likely that the data gathered will not be normally distributed. This will be tested and corrected by transformation so that parametric tests can be conducted. If this is not feasible, non-parametric methods will be employed.

Both parts of the study hypothesis that weight faltering and the clinical sample children will show a lower CIMB score (suggesting fewer behaviours indicating readiness to be fed) than controls. Therefore, the main outcome will be the total CIMB scores averaged

across two meals per child. A t-test (if valid) will be used to ascertain whether there is a significant difference between the average CIMB scores between weight faltering cases, clinical case and controls. There will also be further exploration of the distribution of scores and the proportion of food aversion scores in the cases and controls.

Health and Safety

The proposed study does not involve any contact with patients, as data has previously been collected. Therefore there are no health and safety issues regarding participants. All videos/DVDs will be coded on RHSC property using electrical equipment that has been checked and passed as safe to use.

Ethical Issues

Dr Charlotte Wright already has ethics approval for the data analysis of GMBS data. Ethical approval for study two will be applied for through the integrated research application system (IRAS) and approval will be obtained from Greater Glasgow and Clyde NHS Research and Development department. The main ethical issues are that families will be approached who had videos collected for clinical purpose and are now being asked to use them for research. This will not require the families to do anything other than read the information letter and return the consent form if they wish to take part. Also it could potentially be intrusive to families to be contacted after they have been discharged from the service, however, the feeding clinic team have recently contacted a number of families post discharge (to offer participation in parent group) and no families reported finding this intrusive or distressing. There may also be an issue with ensuring up to date addresses for families who are no longer seen in the feeding clinic. Therefore, addresses will be taken from the hospital records system only if the

child is a current patient in a department of the RHSC. If the child has been discharged from the hospital a member of the feeding clinic team will obtain up to date addresses from the child's GP.

Financial Issues

Costs will be incurred by the use of paper, postage and photocopying, this is estimated at approximately £80-£90.

Timetable

July 2009 – October 2009 - Ethics approval

October 2009 – April 2010 – Data collection

April 2010 - July 2010 – Data analysis and write up

Practical Applications

Currently there is no measure of child behaviour looking at the child's cues indicating readiness to be fed or aversion to feeding. The development and validation of this coding system would provide a tool that could be used to describe the nature of the child's contribution to feeding and the impact of interventions. It could be used clinically or in research to measure child behaviour before and after interventions.

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Appendix3.7

West of Scotland Research Ethics Service
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Telephone: 0141 211 2123
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08 February 2010

Miss Lauren Corlett
Trainee Clinical Psychologist
Dept of Psychological Medicine
Gartnavel Royal Hospital
1055 Great Western Road
Glasgow G12 0XH

Dear Miss Corlett

Study Title:	**Discriminant validity of an observational coding system of child behaviour during feeding**
REC reference number:	**09/S0701/112**
Protocol number:	**Version 4**

Thank you for your letter of 01 February 2010, responding to the Committee's request for further information on the above research and submitting revised documentation.

The further information was considered by a sub-committee of the REC at a meeting held on 4th February 2010. A list of the sub-committee members is attached.

Confirmation of ethical opinion

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

Ethical review of research sites

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

Conditions of the favourable opinion

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

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

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

Centre, management permission for research is not required but the R&D office should be notified of the study. Guidance should be sought from the R&D office where necessary.

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

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

Approved documents

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

Document	*Version*	*Date*
REC application		17 November 2009
Investigator CV		14 November 2009
Supervisor's CV		
Letter from Research Director		28 July 2009
Protocol	Version 4	
Participant Information Sheet	Version 2	21 December 2009
Participant Consent Form	Version 2	21 December 2009
Letter from Dr Wright - Past Patients	Version 2	21 December 2009
Letter from Dr Wright - Current Patients	Version 1	21 December 2009
Letter from South Tyneside LREC		
Copy Substantial Amendment		
Response to Request for Further Information		
Participant Information Sheet – original study		
Participant Consent Form – original study		
Response to Request for Further Information (Letter from Professor Charlotte Wright		01 February 2010

Statement of compliance

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

After ethical review

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

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

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

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

The NRES website also provides guidance on these topics, which is updated in the light of changes in reporting requirements or procedures.

We would also like to inform you that we consult regularly with stakeholders to improve our service. If you would like to join our Reference Group please email referencegroup@nres.npsa.nhs.uk.

09/S0701/112	Please quote this number on all correspondence

Yours sincerely

Liz Jamieson
Committee Co-ordinator on behalf of Dr Paul Fleming, Chair

Email: Liz.Jamieson@ggc.scot.nhs.uk

Enclosures: List of names and professions of members who were present at the meeting
"After ethical review – guidance for researchers"

Copy to: Professor Charlotte Wright
R&D office for NHS care organisation at lead site