Validation of a measure of parental responsiveness: Comparison of the brief Parental Responsiveness Rating Scale (PaRRiS) with a detailed measure of responsive parental behaviours

<table>
<thead>
<tr>
<th>Journal:</th>
<th>Journal of Child Health Care</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manuscript ID</td>
<td>JCHC-2019-0315.R2</td>
</tr>
<tr>
<td>Manuscript Type:</td>
<td>Original Article</td>
</tr>
<tr>
<td>Keyword:</td>
<td>Parental Behaviour, Child, Preschool, Community Health Nursing, Language Development, Observational Methods</td>
</tr>
</tbody>
</table>

Abstract:

Parental responsiveness is vital for child language development. Its accurate measurement in clinical settings could identify families who may benefit from preventative interventions; however, coding of responsiveness is time-consuming and expensive. This study investigates in a clinical context the validity of the Parental Responsiveness Rating Scale (PaRRiS): a time- and cost-effective global rating scale of parental responsiveness. Child health nurse (CHN) PaRRiS ratings are compared to a much more detailed coding of parental responsiveness.

Thirty parent-child dyads completed an 8-minute free-play session at their 27-month health review. CHNs rated the interaction live using PaRRiS. Videos of these interactions were then blindly coded using the more detailed coding system. PaRRiS ratings and detailed codings were compared using correlational analysis and the Bland-Altman method. PaRRiS and the detailed coding showed a moderate-strong correlation ($r_s (28)=0.567$, 95% CI [0.26, 0.77]), and high agreement (Bland-Altman).

CHNs using PaRRiS can capture parental responsiveness as effectively as trained clinicians using detailed coding. This may allow (1) increased accuracy and efficiency in identifying preschool children at risk for long-term language difficulties; (2) more accurate allocation to speech and language therapy (SLT) services; (3) decreased burden on SLT resources by empowering CHNs to make more informed referral decisions.
ABSTRACT

Parental responsiveness is vital for child language development. Its accurate measurement in clinical settings could identify families who may benefit from preventative interventions; however, coding of responsiveness is time-consuming and expensive. This study investigates in a clinical context the validity of the Parental Responsiveness Rating Scale (PaRRiS): a time- and cost-effective global rating scale of parental responsiveness. Child health nurse (CHN) PaRRiS ratings are compared to a much more detailed coding of parental responsiveness.

Thirty parent-child dyads completed an 8-minute free-play session at their 27-month health review. CHNs rated the interaction live using PaRRiS. Videos of these interactions were then blindly coded using the more detailed coding system. PaRRiS ratings and detailed codings were compared using correlational analysis and the Bland-Altman method.

PaRRiS and the detailed coding showed a moderate-strong correlation ($r_s (28)=0.567$, 95% CI [0.26, 0.77]), and high agreement (Bland-Altman).

CHNs using PaRRiS can capture parental responsiveness as effectively as trained clinicians using detailed coding. This may allow (1) increased accuracy and efficiency in identifying preschool children at risk for long-term language difficulties; (2) more accurate allocation to speech and language therapy (SLT) services; (3) decreased burden on SLT resources by empowering CHNs to make more informed referral decisions.

Keywords

Parental Behaviour; Child, Preschool; Community Health Nursing; Language Development; Observational Methods; Scales

INTRODUCTION
Between 7% and 14% of children have language difficulties in the pre-school years and approximately 7.6% have difficulties which persist into the school years (Law et al., 2017; Tomblin et al., 2003; Norbury et al., 2016). With substantially increased risk of poor educational, behavioural and psychosocial outcomes for untreated difficulties (Snowling et al., 2001; Snowling et al., 2006; Bercow, 2008), early identification of children at risk of long-term language difficulties is crucial, **however identification of these children is problematic.**

Recent population-based studies have demonstrated considerable variation in early language development: some children have a slow start which then resolves, some have persisting difficulties, and some have difficulties which emerge later in their development (Law et al., 2017). This volatility means available language screening tools are not sufficient to identify children in need of interventions. Randomised Controlled Trials (RCTs) of parent-child interventions which have targeted families based only on toddler’s language abilities have found null effects. This is not necessarily because the children do not progress, but because control groups catch up equivalently to the intervention group (Wake et al., 2011). It has been suggested that combining a language screen with additional information on known risks could help identify children at risk for persistent problems. However, ‘traditional’ risk factors, such as socioeconomic status (SES) and family history of speech and language problems, only moderately predict language at four years (Law et al., 2012).

Parental responsiveness refers to the characteristics of a parents’ verbal response to a child which is contingent on their preceding behaviour (Eshel et al., 2006). This has recently been investigated as a potential predictive risk factor in Western, English speaking samples. Much of the parent-child interaction literature includes Western, English speaking dyads, and it is therefore important to acknowledge that the same types of parenting behaviours and styles may not be acceptable or appropriate for families from other countries or with different cultural
backgrounds. Levickis and colleagues (2014; 2018b) used a detailed coding scheme of responsive parent behaviours (see Appendix), measuring four specific aspects of parent responsiveness in a parent-child play interaction: parent’s use of expansions (repeating and expanding on a child’s utterance), imitations (imitating a child’s utterance), responsive questions (wh- questions based on the child’s focus of attention) and labels (naming the child’s focus of attention). They found that higher frequency use of expansions, imitations, and responsive questions predicted better child language outcomes at ages two, three and four years, while higher labelling predicted poorer language outcomes. Perhaps, if it were possible to identify families clinically with more limited responsiveness, then interventions could be targeted at those families who would benefit most.

A substantial limitation to detailed coding is that it requires around 60 minutes for a trained clinician to code five minutes of a parent-child interaction video using video coding software, which means it is not viable for use in clinical settings. Therefore, Down and colleagues (2014) developed an easy-to-use rating scale of measuring parental responsiveness; the Parental Responsiveness Rating Scale (PaRRiS) (see Table 1), adapted from Marfo’s maternal responsiveness scale (Marfo, 1992: 224). PaRRiS provides a global rating of responsiveness from 1 to 5, based primarily on how developmentally appropriate parents’ contributions are, and how directive they are of their child’s attention (the less directive, the better). They found PaRRiS was moderately correlated with the detailed coding of responsiveness \( r(242) = 0.44 \), 95% CI [0.345, 0.600]. This means that the PaRRiS could potentially be used clinically as to measure parental responsiveness, as well as directiveness; a common aspect of interactions not captured by the detailed coding method. If PaRRiS is to be used like this, however, further work is needed to test its validity in conditions which more closely resemble those in which it would be clinically applied than in studies conducted to date. Down et al. sampled mostly middle-upper SES families, involved only slow-to talk children, and interactions took place in
the home with speech and language therapists (SLTs) rating the interaction via video. **Child health nurses (CHNs)** work most closely with preschool children and their parents in the UK and are vital in the identification process of children needing extra support from SLTs. In this study we therefore evaluate the use of PaRRiS by child health nurses (CHNs) completing the ratings face-to-face in a clinic setting with parents and their toddlers of any language ability, and middle-lower SES.

<Insert table 1 here>

**AIM**

To validate PaRRiS, as a global rating of parental responsiveness, by comparing it to the detailed coding of parent responsive behaviours (components of responsiveness) in a different context to that of the Down et al. study, and one that is ecologically valid. Addressing this aim will help to determine whether PaRRiS could be used in CHN’s practice to measure parental responsiveness. Given the remit of CHNs to provide universal preventative public health services to families of pre-school children to improve their health and wellbeing, PaRRiS could be an invaluable addition to the CHN assessment and intervention ‘toolkit’ (Pring et al., 2012; Katz et al., 2010).

**METHODS**

**Study design**

This cross-sectional observational study is nested within the IMPACT project (Levickis et al., 2018a), which aims to determine whether PaRRiS (Levickis et al., 2018a) can be effectively and reliably used by healthcare and educational professionals to identify families most likely to benefit from parent-focused language interventions, and to explore families’ experiences of interventions. Ethical approval for the IMPACT project was obtained from the UK’s National Health Service (NHS) Health Research Authority (HRA #). Ethical approval was sought and
obtained for the current sub-project from University Education, Communication and Language Sciences Ethics Committee.

Recruitment

From September 2017 to June 2018, five CHNs were recruited to the IMPACT study led by Author 2, through an NHS Trust’s Community Matron and Health Visitor Area Leads in the North East of England. All CHNs provided written informed consent to participate. Between October 2017 and June 2018, these CHNs recruited 30 parents whose children were due for their 27-month health check. All families attending a centre for their child’s 27-month review (i.e., not those having reviews in their home) during this time, were eligible to take part. The second author was available to go through the consent form verbally to ensure parents understood what was being asked of them. Parents were excluded if they were not able to understand the information sheet and consent form (n=0), otherwise all parent-child dyads fitting the above criteria were eligible. All parents provided written informed consent for themselves and their child to participate, including consent for videos to be recorded and stored securely (n=30).

Procedures

Training

Once recruited, CHNs attended a workshop, in which they were trained in the use of PaRRiS, using several practice training videos, until reaching 80% or greater reliability with pre-ratings.

For the detailed coding of videos, the first author studied the responsive parent behaviours coding manual and coded three training videos using this. Blinded inter-rater reliability between second and first authors was calculated on three training videos using Cohen’s Kappa. Following precedent, a Cohen’s Kappa score of 0.61 or greater was considered sufficient for agreement. This demonstrated sufficient knowledge of the detailed coding scheme for further
analyses. Discussion between the first and second authors (A1 & A2) clarified any disagreements after coding had taken place.

**Data collection**

A2 attended the 27-month health checks and set up a standard toy-set and video recorder on a tripod. A2 then left the room to maintain blinding of ratings, and the CHNs observed in real-time, five minutes of parent-child free-play of consenting dyads using PaRRiS rating form, assigning each of the 30 parents scores from one to five. Parents then filled out a survey, including questions about their experience of the free-play session, general demographics, whether they had any concerns about their child’s language, and whether their child was combining words. A2 rated the video recorded interactions post-visit using PaRRiS, blind to the CHN’s ratings. Any disagreement between A2’s and CHN’s PaRRiS ratings (n=8, each by one point on the rating scale) were decided independently by A1, and these were the ratings used in the final analyses.

A1 coded five minutes of each of the 30 parent-child free-play videos in-depth, using the detailed coding scheme of responsive behaviours created by Levickis and colleagues (2014). Where possible, the five-minute periods that were coded were taken from one minute into the video (n=25) to allow for a warm-up period. Five videos were coded from different start points for the following reasons: one video started two minutes in as the child was out of camera shot before this, and four videos were coded from the beginning due to the length of the original videos being shorter than planned (i.e. less than six minutes). Video samples featuring both parents were rated by focusing on the parent most involved in the interaction. The presence of siblings in videos was considered to be representative of parent-child interactions at home and were therefore included.
Detailed coding of the four responsive behaviours was completed using BORIS software (Friard and Gamba, 2016). This allows the user to organise, code, and analyse observational data. The four responsive behaviours (expansions, imitations, responsive questions and labels) were all counted as types of verbalisation, and each were mutually exclusive. Any verbalisations which were not responsive behaviours were coded as ‘utterances’. Hence data were coded as five types of verbalisation. Each video was watched four times and coded by A1. Responsive behaviours in each video were counted and a ‘rate of frequency per minute’ was calculated for each.

Data analysis

Data analysis was completed in SPSS. To establish inter-rater reliability for the detailed coding, A2 completed detailed coding for 20% of the videos (n=6), randomly selected and blind to A1’s coding. A Cohen’s Kappa score of 0.61 or greater was considered sufficient for agreement, the same as for the training videos.

All data were tested for normality using the Shapiro-Wilk test. Depending on the normality of the distribution, a Pearson’s correlation coefficient or a Spearman's rank-order correlation was used to determine the relationship between parental responsive behaviours (frequency of all responsive behaviour use per minute) and the CHN PaRRiS global rating of the parent-child interaction. The Bland-Altman method was also used to measure agreement, as high correlation does not necessarily demonstrate good agreement between two measures (Bland and Altman, 1986). The median and interquartile range of each individual responsive behaviour was also calculated.

RESULTS

Reliability
Blinded inter-rater reliability between second and first authors detailed coding was calculated on three training videos using Cohen’s Kappa, \( \kappa = 0.713 \text{ to } 0.874, \text{ [95\% CI 0.48, 1.00]} \), percentage agreement 79-88%.

Blinded inter-rater reliability of A1’s coding of the video interactions using the detailed coding scheme showed moderate-strong agreement between the two raters’ judgements across all five types of utterance, \( \kappa = 0.91 \text{ to } 1.00, \text{ [95\% CI [0.85, 1.00]} \), percentage agreement 92-100%.

**Participants**

Table 2 summarises the participant characteristics. The sample contained approximately equal numbers of boys and girls, and 24 (80%) parents completed post-16 education. Participants were on average slightly more disadvantaged than the general UK population, with a mean score on the Index of Multiple Deprivation of 3.03 (SD=2.3) out of 10.

On average, parents were rated ‘moderately’ responsive on PaRRiS (mean score 3.03 out of 5, SD=0.77). The median score of responsive behaviours per minute was 4.2 with an interquartile range of 3.5. Responsive questions were the most-used behaviour (mean 1.707 per minute), with labels being the least-used (mean 0.773 per minute). Imitations were slightly more commonly used than expansions (mean 0.927 and 0.833 per minute respectively). Further information on the distribution of individual responsive behaviours can be found in the supplementary materials.

A Spearman’s rank-order correlation \( r_s \) showed a moderate-strong, positive correlation between the researcher’s detailed coding of responsiveness and CHN’s PaRRiS ratings \( r_s=0.567, \text{ 95\% CI [0.26, 0.77]} \). This agreement was confirmed by the Bland-Altman method,
see Figure 1, where all differences between the two ratings are within the upper and lower confidence levels of the limits of agreement, and thus it can be said that the two ratings show acceptable agreement (Giavarina, 2015).

DISCUSSION

The findings of this study strengthen conclusions drawn from the results from Down et al.’s study (2014). They show that a global measure of responsiveness used by CHNs when compared with a highly detailed coding of responsive parent behaviours showed very good agreement. This strong correlation is significant for two main reasons. Firstly, because the measures differ so much in terms of time efficiency and expertise needed, and secondly, because PaRRiS considers the additional element of parent directiveness where the detailed coding does not. The fact that PaRRiS considers parent directiveness is also important in terms its usefulness as a rating tool. Directiveness is considered a key marker of the quality of parent-child interactions, and impacts on a range of aspects of children’s development (Rocha et al., 2019), thus it gives PaRRiS a richer depth of measurement. The correlation between the two methods of measuring parental responsiveness shown here means that PaRRiS has the potential to be used by health professionals to capture parental responsiveness with children at 27 months in a quick and cost-effective manner.

This study has several implications for the development of clinical services for children who are slow to talk or at risk of poor language development. It has been difficult to know whether early intervention is targeting the right groups, due to natural volatility of language in young children. This has meant that that sometimes parents who are already very responsive to their child receive interventions which target increasing responsiveness, which they do not need. This is clearly a poor use of resources and could increase anxiety in families where the outcome is likely to be positive. In other cases, a ‘watch and wait’ approach has been applied when in...
fact the family may have needed or benefited from early intervention. By accurately and efficiently identifying dyads at risk through incorporating their PaRRiS rating into decision making, families and children will be more likely to receive the care they individually require. Secondly, low SES groups are often targeted for early intervention, despite the fact that the way in which SES operates in relation to child language outcomes is unclear. It is suggested in recent literature that the relationship between SES and child language outcomes is spurious, masking the association with more directly influential factors such as language environment and parental input (Letts, 2018; Rowe, 2008). Targeting according to responsiveness instead of SES is less stigmatising, and potentially more likely to be accurate in identifying children most at risk. Finally, the fact that CHNs can be trained in first line of universal surveillance could also reduce the burden of inappropriate referrals currently placed on SLTs, and this initial ‘sifting’ process could produce more appropriate triaging. These implications need to be tested in research studies, however the potential of PaRRiS is clear.

**Strengths and limitations**

The participants, data collection context, and the practitioners in this study represent the normal practice of the services within which the data were collected, providing high ecological validity. High inter-rater reliability is shown between the authors’ coding in both training in detailed coding, and coding agreement in the video recordings. The former allows us to have confidence in the findings of the study and the latter demonstrates the clinical validity of PaRRiS. This study is also representative of a different demographic to previous studies in this area, being a sample of predominately low SES participants and including fathers, both less well-researched populations in this field. Nevertheless, data may be influenced by combining mothers and fathers in this study, since their differences in play and interaction styles have commonly been reported (Pancsofar & Vernon-Feagans, 2006; John, Halliburton & Humphrey, 2012; Lindsey & Caldera, 2006). Although this may not have impacted on the key findings of the current
study given we were comparing the ratings between use of PaRRiS and detailed rating, this should be taken into account when looking at overall responsiveness ratings and behaviours. Furthermore, the study sample size is small, (n=30). This impacts on the generalisability of the findings, and also means confident claims cannot be made regarding its relationship with parental responsive behaviours (Levickis et al., 2014; Levickis et al., 2018b). The sample is also slightly skewed in terms of SES, meaning it is potentially not representative of wider UK populations.

Implications for Practice

This study has shown that CHNs can objectively identify levels of parental responsiveness when interacting with their preschool children by using PaRRiS. There is the potential to improve efficiency of services by targeting appropriate support and intervention more accurately. Timely referrals can be made to speech and language therapy services as the families in greater need can be identified at an early stage.

If surveillance programmes such as PaRRiS are to be worthwhile and indeed ethical, effective interventions must be developed. Evidence regarding parent-child interaction interventions is mixed. A crucial next step would be to determine whether PaRRiS identifies families who would benefit from interventions, and to develop interventions tailored to the diverse needs of the populations served by CHNs and SLTs.

Conclusion

PaRRiS shows very good agreement with a detailed coding method within a real-life setting. In combination with previous investigations (Down et al., 2014), this study shows that PaRRiS holds promise as a clinically applicable tool for use by CHNs to support them in their role of improving health and wellbeing outcomes in young children.

SUPPLEMENTARY MATERIALS
Underlying research materials for this paper can be accessed by contacting the corresponding author. Both the full results for the distribution of individual responsive behaviours and the manual for the detailed coding can be found in the supplementary materials that go with this article.

DECLARATION OF INTEREST

The authors report no conflicts of interest. The authors are responsible for the content and writing of the paper.
REFERENCES


Table 1: PaRRiS: The Parental Responsiveness Rating Scale (adapted from Marfo 1992, p. 224)

<table>
<thead>
<tr>
<th>Rating</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 = very low</td>
<td>Mother rarely responds in a developmentally appropriate way either verbally or non-verbally to any of Child’s gestures or verbalizations AND Mother attempts to re-direct Child’s behaviour†, rather than following Child’s interests.</td>
</tr>
<tr>
<td>2 = low</td>
<td>Mother responds occasionally in a developmentally appropriate way either verbally or non-verbally to Child’s gestures or verbalizations AND/OR Mother spends more time attempting to re-direct Child’s behaviour than following Child’s interest.</td>
</tr>
<tr>
<td>3 = moderate</td>
<td>Mother spends some time responding in a developmentally appropriate way either verbally or non-verbally to Child’s gestures or verbalizations, and some time ignoring them AND/OR Mother spends equal time following Child’s interest and re-directing Child’s behaviour.</td>
</tr>
<tr>
<td>4 = high</td>
<td>Mother often responds in a developmentally appropriate way either verbally or non-verbally to Child’s gestures or verbalizations AND/OR Mother spends more time following Child’s interest than re-directing Child’s behaviour.</td>
</tr>
<tr>
<td>5 = very high</td>
<td>Mother frequently responds in a developmentally appropriate way either verbally or non-verbally to Child’s gestures or verbalizations AND Mother does not attempt to re-direct Child’s focus from the current activity, but follows Child’s interests.</td>
</tr>
</tbody>
</table>

† ‘Re-directing the child’s behaviour’ refers to redirecting the child’s attention away from their current play and interests at that point in time.
Table 2 Parent-child dyad characteristics and caregiver responsiveness ratings

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Total sample (n = 30)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Children</strong></td>
<td></td>
</tr>
<tr>
<td>Age at video recording (months), mean (SD)</td>
<td>27.8 (1.9)</td>
</tr>
<tr>
<td>Male Sex % (n)</td>
<td>56.7 (17)</td>
</tr>
<tr>
<td>Hears non-English language regularly at home % (n)†</td>
<td>0.03 (1)</td>
</tr>
<tr>
<td>Diagnosis of developmental condition % (n)†</td>
<td>0.03 (1) (Hearing loss)</td>
</tr>
<tr>
<td><strong>Parents (1 per child)</strong></td>
<td></td>
</tr>
<tr>
<td>Education % (n)‡</td>
<td></td>
</tr>
<tr>
<td>Left full time education at ≤16 years</td>
<td>20 (6)</td>
</tr>
<tr>
<td>Left full time education at ≥17 years</td>
<td>80 (24)</td>
</tr>
<tr>
<td>IMD Index of Multiple Deprivation§ score /10 % (n)</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>50 (15)</td>
</tr>
<tr>
<td>4</td>
<td>27 (8)</td>
</tr>
<tr>
<td>5</td>
<td>13 (4)</td>
</tr>
<tr>
<td>8</td>
<td>10 (3)</td>
</tr>
<tr>
<td>Presence at free-play session % (n)</td>
<td></td>
</tr>
<tr>
<td>Mother only</td>
<td>63 (19)</td>
</tr>
<tr>
<td>Father only</td>
<td>7 (2)</td>
</tr>
<tr>
<td>Mother and father</td>
<td>17 (5)</td>
</tr>
<tr>
<td>Other◊</td>
<td>13 (4)</td>
</tr>
<tr>
<td><strong>Parental responsiveness</strong></td>
<td></td>
</tr>
<tr>
<td>PaRRiS rating % (n)</td>
<td></td>
</tr>
<tr>
<td>1 = very low</td>
<td>1 (3.3)</td>
</tr>
<tr>
<td>2 = low</td>
<td>5 (16.7)</td>
</tr>
<tr>
<td>3 = moderate</td>
<td>16 (53.3)</td>
</tr>
<tr>
<td>4 = high</td>
<td>8 (26.7)</td>
</tr>
<tr>
<td>5 = very high</td>
<td>0 (0)</td>
</tr>
<tr>
<td><strong>Detailed rating median (IQR)</strong></td>
<td></td>
</tr>
<tr>
<td>Talkativeness (rate of utterance/minute)</td>
<td>13.5 (7.1)</td>
</tr>
<tr>
<td>Rating Score (rate of all responsive behaviours/minute)</td>
<td>4.2 (3.5)</td>
</tr>
<tr>
<td>Overall utterances</td>
<td>67.5 (35.3)</td>
</tr>
<tr>
<td>Overall responsive behaviours</td>
<td>21 (17.5)</td>
</tr>
</tbody>
</table>

†Data available from 28 children
‡Data available from 27 parents
§Measure of socioeconomic status. Derived from national census; English Index of Multiple Deprivation (rating 1-10, 1 being most deprived and 10 being least). No participants were in deciles 2, 3, 6, 7, 9, or 10.
◊In some sessions, grandparent, foster parent and/or siblings were present
⁞One grandmother, one foster mother
Figure 1 “Bland-Altman plot showing the agreement between the detailed rating of caregiver responsiveness and the Parental Responsiveness Scale (PaRRiS), with 95% limits of agreement (converted z-scores) and 95% confidence intervals”
Distribution of individual responsive behaviours

<table>
<thead>
<tr>
<th>Responsive behaviour (rate per min)</th>
<th>Mean (SD) [median, IQR]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expansion</td>
<td>0.833 (0.86) [0.5, 1.35]</td>
</tr>
<tr>
<td>Imitation</td>
<td>0.927 (0.83) [0.8, 1.15]</td>
</tr>
<tr>
<td>Responsive Question</td>
<td>1.707 (1.26) [1.4, 1.9]</td>
</tr>
<tr>
<td>Label</td>
<td>0.773 (0.80) [0.6, 0.8]</td>
</tr>
</tbody>
</table>
Detailed Coding of Parental Responsiveness

A manual to aid in the analysis of responsive behaviours in parent-child interactions

What is considered a verbalisation?

A verbalisation is any linguistic information directed at the child. It consists of a grammatical unit + breath unit + terminal intonation contour. In this coding scheme, all verbalisations were coded as either an Utterance (that is, a verbalisation which is not classed as a responsive behaviour), or a responsive behaviour: an Expansion, an Imitation, a Responsive Question or a Label.

The five types of verbalisation are mutually exclusive meaning that only one code may be assigned to a parental verbalisation. In some cases, parents used several verbalisations in a row. To address this situation, a hierarchy of codes was incorporated into the coding scheme so that it was clear which verbalisation should be coded. For example in a series of parental verbalisations whereby a parent says a string of sentences without any definite pauses, it was decided that only the first verbalisation would be coded and the rest would be ignored. Segmentation was based on a grammatical unit + breath unit + terminal intonation contour (i.e. the end of a pattern of pitch in speech). This hierarchy of codes was established as it was too difficult for a coder to retain all of the information from a series of verbalisations which could lead to confusion of which behaviours to code and this in turn could weaken reliability. An example of the hierarchy as it would be applied to a string of parental verbalisations is as follows:

**E.g. 1 C:** Drink. **P:** Drink. [Imitation] (no breath pause or intonation contour) *Let’s give baby a drink.* [Expansion] (no breath pause or intonation contour) *What is baby going to drink?* [Responsive Question].

This would be coded as an Imitation (as this is the first verbalisation).

**E.g. 2 C:** Dindin. **P:** Is it dindins time? [Expansion] (no breath pause or intonation contour) *What are we having for dindins?* [Responsive Question].

This would be considered one verbalisation, and coded as an Expansion (as this is the first verbalisation).

**E.g. 3 C:** *looking at 2 animals for Old MacDonald song* **P:** Which one? (no breath pause or intonation contour) *Are we going to do the cow?*

This would be considered one verbalisation, and would not be coded as a responsive behaviour, as the parent, by suggesting ‘*Are we going to do the cow?’* does not give chance for the child to respond, not making ‘*Which one?’* a Responsive Question.

**E.g. 4 C:** *Where’s Aunty Sarah?* **P:** Can you see her? (no breath pause or intonation contour) *What’s she doing?*
In cases where the parent’s immediate response would be classed as an utterance, as in this example, but is followed immediately by a responsive behaviour, the responsive behaviour is counted.

If there are clear breaks between as according to the segmentation guidelines, each is considered its own verbalisation e.g.:


This would be coded considered two verbalisations, and both Expansion and Responsive Question would be coded, as long as the child was still focusing on the banana when the Responsive Question was asked. However, if a parent corrects him/herself during a sentence so that there is a breath pause, this is considered one verbalisation, e.g.

P: do you want- [breath pause] do you want to put that in?

Songs are coded as one verbalisation. However if they are broken up, they are coded each time the song restarts, and any Responsive Behaviours and Utterances between are coded as such, e.g.:

P: Old MacDonald had a farm eeiieeioo, and on that farm he had [Utterance]*pause* What did he have? [Responsive Question] A sheep. With a baa baa here and a baa baa there... [Utterance]

The only non-word vocalisations which are coded (and thus considered verbalisations) are:

- those which are Imitations of the child (can be anything including an intake of breath, or noises like ‘urgh’ or ‘oh’) which would always be coded as Imitations or Expansions (i.e. if these are not repetitions of the child they are not considered as verbalisations at all)
- OR vocalisations which have a specific linguistic meaning (e.g. animal/environment noises; ‘uh huh’ or ‘mhm’ – meaning ‘yes’; ‘ah-ah’ – meaning ‘no’; ‘Ah’ or ‘oh’ – signalling comprehension; ‘uh oh’; ‘shh’).

The following are examples of what would and would not be considered a verbalisation:

✓ C: *Intake of breath* P: *Intake of breath* [Imitation]
✓ C: *Makes toy person fall down stairs* P: Uh oh! [Utterance]
✗ C: Not me P: Oh *intake of breath* [neither considered a verbalisation]

Expansions

Expansions are coded when a parent repeats one or all of the child’s preceding words and adds to the child’s preceding verbalisation (Girolametto et al., 2002; Girolametto, Weitzman, Wiigs, & Pearce, 1999; Lasky & Klopp, 1982). This includes both simple and complex Expansions.

A simple Expansion is when a parent repeats immediately the child’s preceding word approximation or verbalisation and completes the verbalisation by adding one or more morphemes (i.e. the smallest
meaningful unit of language, which may be a word or word element) or words. This includes any words, including praise, but excluding any form of ‘yes’.

- C: Ball. P: It’s a red ball.
- C: One more. P: Another one.
- C: Frog. P: Frog, yeah, good girl.

A complex Expansion is when a parent repeats the child’s preceding vocalisation/word and adds a question within the same verbalisation. This includes both yes/no questions and Responsive Questions.

- C: Dirt. P: Dirt. What’s growing in the dirt?
- C: No. P: No, you don’t want a dummy do you?
- C: In there. P: In there. In where?

If the parent does not repeat the verbalisation first, as in the examples above, and simply asks a question, this is coded differently. If this is a yes/no question, it is coded as a simple Expansion. If it is a Responsive Question, this is coded as a Responsive Question rather than an Expansion.

- C: Pig. P: Is it a pig? → (Simple) Expansion
- C: Dog. P: What’s dog doing? → Responsive Question

Imitations

An Imitation is coded when a parent repeats the child’s preceding vocalisation or verbalisation exactly or with a reduction of words (Girolametto et al., 2002; Girolametto et al., 1999; Lasky & Klopp, 1982).

Imitations are also coded if there is an exact repetition of the child’s preceding verbalisation or vocalisations and an addition of any form of ‘yes’ (e.g. yes, yeah, mhmm). N.B. reductions such as from ‘piggy to ‘pig’ are still considered Imitations.

- C: Bottle. P: Bottle.
- C: Mummy let’s go. P: Let’s go.
- C: Piggy. P: Pig, yeah.
- C: Oh. P: Oh.

Responsive Questions

A Responsive Question is coded when the parent asks a ‘wh’ question (including ‘what’, ‘when’, ‘why’, ‘where’, ‘which’ ‘who’ ‘how’ and choice questions) that is immediate and dependent on the child’s preceding act (Tamis-LeMonda, Bornstein, & Baumwell, 2001), and which is intended to require an answer. The parent then waits (even briefly) for a response. The question can be about an object, event or activity, and can be phrased with ‘wh’ word at different points in the sentence. Requests for repetition, e.g. if the parent has not understood, and makes a request which is the equivalent of ‘What did you say?’ is coded as a responsive question as it is a direct question about the child’s preceding act (their verbalisation). Yes/no questions are not coded.
Labels

A Label is coded when a parent Labels an object or action, which is the focus of the child, with the Label in the final position of the carrier phase (Girolametto et al., 2002; Girolametto et al., 1999; Tomasello & Farrar, 1986). Counting objects is not considered Labelling, however Labelling colours would be.

- C: *looking in bag* P: *Who's in the bag?*
- C: *Child holding a horse* P: *What's that?*
- C: *Child playing with toy train* P: *What does the train say?*
- C: *Oh dear* P: *Oh dear what?*
- C: *In there* P: *In where?*
- C: *Child attending to baby and bottles* P: *Look, how many bottles is there?*
- C: *unintelligible* P: *Sorry?*

Labels are not coded when they are phrased as a question:

- C: *looking at pigs in book* P: *Are they pigs?*

If a parent Labels the focus of the child's attention after a child's verbalisation, and the child's verbalisation is unintelligible, mark as a Label. However if the verbalisation appears to be known (i.e. child says it consistently, or parent responds in such a way that the verbalisation appears to be something that the child says consistently), mark as Expansion or Imitation (depending on what the parent says).

References


