

Finding child welfare in Victorian newspapers: an exercise in corpus-based  
discourse analysis

Paul Atkinson and Ian Gregory, Lancaster University

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Corpus linguistics, the 'study of language based on examples of real life language use', has found a growing number of applications, such as language description and the interpretation of literary texts. In this article I discuss its use in historical research and use a case study to examine its strengths and weaknesses for this purpose. In the case study I examine what nineteenth-century British newspapers can tell us about child welfare and infant mortality.<sup>1</sup>

Corpus linguistics depends on the use of computers, which permit large-scale data processing which would not otherwise be feasible. Accordingly, the texts studied need to be digitised. For some countries, such as the UK, digitised collections now afford the historian rapid access to a large body of nineteenth-century journalism. Pre-eminent among these collections is British Library Newspapers, a Gale Cengage product developed with the British Library and JISC funding, which provided the digital text used here. While the digitisation, based on Optical Character Recognition (OCR), is of a generally high standard (some issues are discussed below), historians need to bear in mind Hitchcock's reminders about how the past is being mediated to us in any digital product. For example, although Gale's academic panel made a

careful effort to select representative titles for digitisation, less than ten titles from mainly rural areas of England and Wales offered a long print run. If others had been available, they could have told a different story. No-one suggests that the digitised collections could ever be a sufficient source on their own. Nevertheless they offer an effective way into the primary sources.<sup>ii</sup>

This is a good time to assess the potential of corpus linguistics for the historian. Its techniques are becoming widely available via free-access web-based or downloadable tools such as CQPweb and AntConc. Since the present research began, Gale Cengage have begun to offer their underlying data and metadata to institutions which subscribe to British Library Newspapers (though the website does not yet make this obvious). A historian who wishes to explore the use of corpus linguistics should now find it relatively easy to get started.<sup>iii</sup>

## WHAT CORPUS LINGUISTICS AND DISCOURSE ANALYSIS DO

Corpus linguistics analyses *corpora*, large bodies of real life language data. The corpora in this study were the complete published text of four English newspapers during the nineteenth-century: every word published from 1801-1900 for two titles, and from their first issue in 1869 or 1870 to 1900 for the other two. Because corpora are generally large (the smallest of these four corpora contains 386 million words), they can reliably be used as a reference 'universe' against which claims about the language in smaller parts of the corpus can be measured. For example, one key tool is *collocation*, which compares the frequency of word forms around a target word with their frequency in the whole corpus. The present study, for example, finds that, in one of the titles, 'defendant' and 'prisoner' occur near a group of words for nursing

a child much more frequently than they do in the whole corpus: the interpretation of this is discussed later.

More generally, corpus linguistics uncovers objective patterns in a text by the quantitative analysis of language. It has been claimed that this form of 'distant reading' can give a truer picture of what a whole text is saying than the subjective impression a human reader derives from examining the text. Confirmation bias, for instance, is avoided, as is undue emphasis on striking and unusual passages. While unusual passages can be particularly full of meaning for the scholar, it is also valuable to know what the 'normal' was. Corpus linguistics allows an objective assessment of how typical a passage of text is of the corpus in which it occurs. Discourses can gain greatly in strength through repetition, so this measure of the frequency of repetition is helpful. Newspapers are a text form particularly likely to repeat a discourse: Fairclough argues that this is an important element of media power. It is, for example, informative to the historian, as we shall see, to know that the expression 'nurse girl' occurs 37 times in the *Northern Echo* in the nineteenth-century, but 'nurse boy' not at all. This gendered discourse of childcare presumably reinforced the ideology which deemed it normal for girls, but not boys, to nurse younger siblings or to nurse unrelated children for payment. The frequencies with which, for example, different advertisements for infant foods appeared, can also be readily charted.<sup>iv</sup>

Corpus linguistics proceeds by means of queries, which return 'concordance lines' showing, for each instance of the target expression, the key word in context: typically a dozen words of the text before and after it. This process is, in the ways just described, qualitatively different from searching, which it complements. As Laurel Brake, the newspaper historian, comments, 'Given text mining and sophisticated

search software, the study of media is open to many ingenious search structures ...‘results’ ... may resemble the outcomes of statistical social science or linguistic software, rather than discursive media history’.<sup>v</sup>

While the rigour of quantification is valuable, the historian is unlikely to find quantitative analysis sufficient. In the present study, purely quantitative methods such as the analysis of word frequencies and the calculation of which words collocated most strongly with target expressions about child welfare were relatively uninformative, as discussed below. Corpus linguistics showed its full value only when used to support discourse analysis. This is not the place for an account of discourse analysis, for which the reader is referred to its practitioners such as Baker or Fairclough. What was attempted here was to use corpus-based discourse analysis – labelled here CBDA for short – to detect traces of ideologies in newspaper texts.<sup>vi</sup>

My debt to the postmodern ‘linguistic turn’ in history should be clear: this study accepts that uses of language as a social practice (discourses) ‘systematically form the objects of which they speak’. That is, nineteenth-century discourse about child welfare and infant mortality, which both shaped and used text from newspapers such as the examples studied here, formed the nineteenth-century constructs of child welfare and infant mortality. The study of newspaper texts does not, as modernism thought, offer us unmediated glimpses of the nineteenth-century world but it does let us glimpse nineteenth-century minds at work discursively constructing that world. Traces are visible of what was in the writers’ – and possibly even the readers’ – minds. The texts we have transmitted discourses, which we may be able to deduce, and these in turn had deducible ‘effects upon social structures, as well as being determined by them’. Caution is needed since discourses can be difficult to pin

down: 'surrounding any ... event ... there may be a variety of different discourses, each with a different ... way of representing it to the world.' When a historian identifies a discourse this is an act of interpretation, open to contestation.<sup>vii</sup>

## CASE STUDY: RURAL CHILD WELFARE AND INFANT MORTALITY

I now apply CBDA to a historical problem. Why did later nineteenth-century British society, which made impressive inroads into mortality rates above the age of one year, find it such a struggle to reduce the mortality of infants? A large and impressive literature addresses this problem from a demographic, epidemiological point of view, interrogating mainly statistical data. It is fair to say that we still do not know the answer, though we know much more about the contours of infant mortality than we once did. Can an extra perspective on infant mortality add to the knowledge contributed by demographic approaches? One under-explored avenue is what contemporaries were thinking about child welfare. Even national discourses about what caused infant mortality and how to reduce it, present in works by public health leaders such as George Newman or Arthur Newsholme, are insufficiently studied. Equally relevant is the local dimension: how much attention did infant mortality receive, of what kinds, and how did this vary in time and place? Rural infant mortality is particularly under-researched. In this case study I examine what can be learned by interrogating the text of four newspapers published in mainly rural areas. One goal was to see if the different infant mortality experiences in different rural places (remaining high in northern England and in Wales, falling in the south and east) could be linked with systematic differences in how child welfare was conceived.<sup>viii</sup>

### *Method*

The first step in CBDA is the preparation or selection of a corpus. Baker discusses the main considerations here, of which representativeness, or typicality, is perhaps the most important in historical research. Four newspaper titles were used in this project: some of their key characteristics are set out in table one. Unless otherwise stated, only text from 1870 (1869 in the *Western Mail*) has been used. Public interest in infant mortality dates, conveniently, from around 1870. The digitised text of these titles was kindly provided by the British Library and Gale (this service is now available to any institution with a Gale subscription).<sup>ix</sup>

Table one: The four newspaper titles

Title	Dates covered	Corpus size (mw)*	Publication frequency	Price (1880)	Political allegiance
<i>Hampshire Telegraph</i>	1800-1900	531	Weekly	2d	Liberal
<i>Ipswich Journal</i>	1800-1900	424	twice weekly	≤2d**	Conservative
<i>Northern Echo</i>	1870-1900	386	Daily	½d	Liberal
<i>Western Mail</i>	1869-1900	756	Daily	1d	Conservative

\*million words. The post-1870 output of the *Hampshire Telegraph* and the *Ipswich Journal* were 272mw and 212mw respectively.

\*\*In 1880 *Ipswich Journal* customers received two editions per week for 3½d

Representativeness has to be addressed on various levels. As already discussed, these four titles may not have been representative of all titles serving rural areas:

their selection was imposed to a degree by the range of titles available in digital form. Alternatives published in Bristol, Derby, Oxford, Newcastle and Bangor were also considered: these four were chosen to give a balanced sample of papers from the north and west of England and Wales and from the south and east, because these two zones had different trajectories of infant mortality. In practice the chosen titles serve disparate parts of England and Wales, have a range of publication frequencies and prices, span all the common political allegiances held by British papers of the period and aim for varied audiences from elite to skilled working class.<sup>x</sup>

This text was suitably annotated for querying and uploaded to CQPweb. Query terms were selected to shed light on four possible lines of enquiry: the concept of infant mortality itself (which returned 306 hits); the nursing of children (1132 hits); milk in relation to children (148), and expressions for particularly relevant causes of death (109). Some instances of a text string were a hit in more than one category. Details of the search strings are provided in the Annex. These topics were chosen on the basis of reading some of the contemporary and near-contemporary medical literature about infant mortality. Advertisement text is much more repetitive than the rest of a newspaper, so its inclusion would skew any analysis of word frequencies. While they are a worthy subject of study, advertisements have been excluded from the present work as far as possible. Working with newspaper text for evidence about child welfare normally involves reading it 'against the grain': child welfare is not the original subject of most of the writing: this is discussed in the next section.<sup>xi</sup>

## *Results*

These four lines of enquiry are now discussed in turn. The first was to approach the subject directly, examining what the four titles had to say about the determinants of infant mortality. The term 'infant mortality' itself was used by contemporaries – it appeared in the 1841 Census Report and in annual reports of the Registrar General in 1847, 1859, 1869 and nearly every subsequent year – so it was reasonable to search for this phrase in the four titles. The possibility must also be considered that titles were writing about the phenomenon without using our phrase to describe it. Since the term 'infant mortality' seems to have been coined by public health specialists for expert use, it was important to test whether infant mortality was also discussed using different vocabulary, possibly providing a different perspective.<sup>xii</sup>

Results using the query term 'infant mortality' are presented first. In the *Ipswich Journal*, comments about determinants were not common, occurring only about every fourth time infant mortality was mentioned. Half of these referred to sanitation, reflecting the widespread view that many deaths resulted from contact with faecal matter leading to diarrhoea. Reports highlighted the problem in rural as well as urban areas: a rare (and detailed) discussion of rural housing in 1868 commenting that landlords insisting on more frequent cesspool emptying would do more than anything else against infant mortality. Apart from poor sanitation, infant mortality was most likely to be blamed on deficiencies in child care such as 'improper feeding'.

Examples are also encountered of nationwide scares such as infants allegedly being murdered for the life insurance money, and, in an example of a 'resistant discourse,' deaths being due to smallpox vaccination.<sup>xiii</sup>

Coverage of the determinants of infant mortality in the *Hampshire Telegraph* was similar in most respects: the same causes were referred to, sanitation and the quality of child care again being prominent. In the *Northern Echo* and the *Western Mail*,

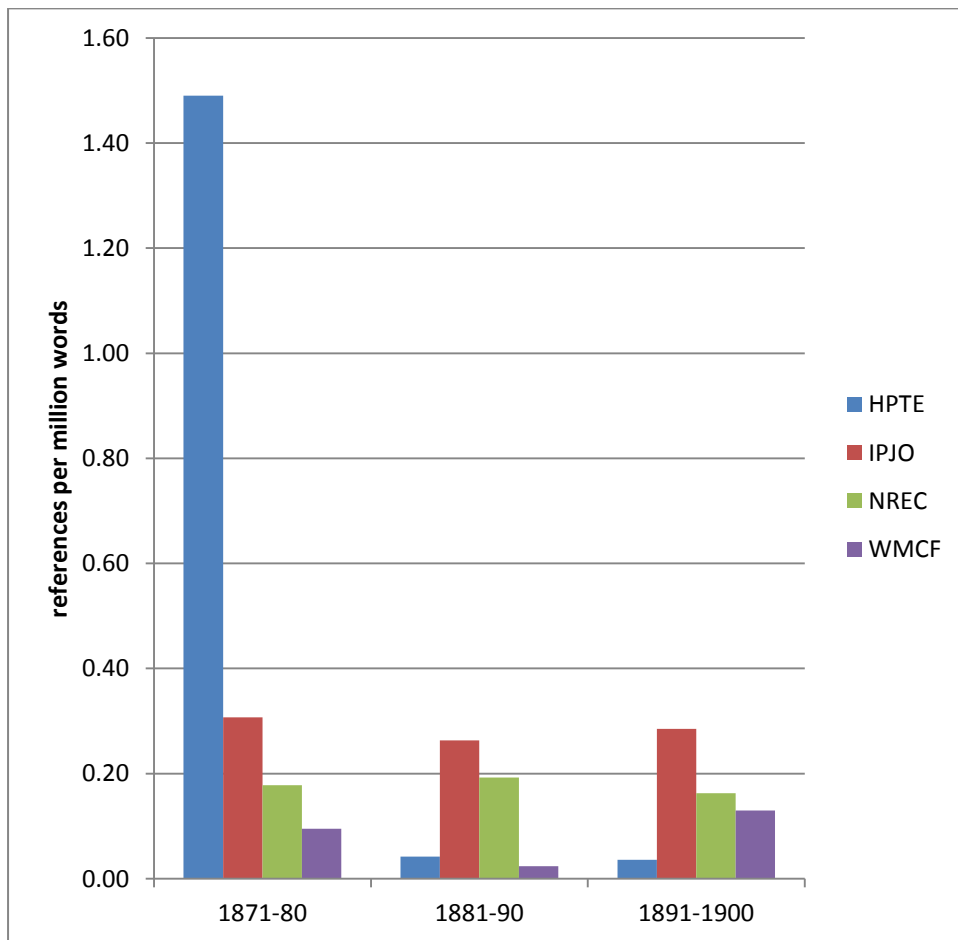


much more stress was laid on the alleged neglect and ignorance of mothers than in the other titles: improper feeding was the main example, with references to premature weaning and a number of references to bottle feeding in place of breast feeding, which was shown by statistics to be much safer. The dangers of feeding bottles, which were difficult to clean well enough, are only reported, among our four titles, in the *Northern Echo* and the *Western Mail*. The discourse about the ignorance and neglect of mothers, principally in the matter of feeding, became more common in the 1890s. Just two suggestions were located that infant mortality was the result of poor maternal diets due to poverty, both in the 1870s.<sup>xiv</sup>

Scholarly accounts of attempts to reduce infant mortality in Britain stress the contribution of Medical Officers of Health (MOHs), who used comparative statistics to identify locations with unexpectedly high rates, and discuss local efforts to address real or imagined shortcomings in the quality of child care through the organisation of health visiting, a process gathering momentum by 1900. There are examples of both these processes in the four titles. However, the frequency with which infant mortality was mentioned did not increase, as these accounts would predict, and was always low, as figure one shows. Readers of these titles in the last three decades of the nineteenth century would not, then, have gained the impression that infant mortality was an important social problem, or been very aware of the (actually quite strenuous) efforts of local authorities to reduce it. Infant mortality was simply not an issue of frequent public comment, for these four titles at least. (In figure one, the much more frequent references in the *Hampshire Telegraph* during the 1870s were generated by its policy of printing a weekly report prepared by the MOH at this time: this was discontinued in 1878.)<sup>xv</sup>



Figure one: References to 'infant mortality' by title and decade



The discussion of infant mortality without the use of the exact phrase was then examined. There were many instances of 'death' within six words of 'infant\*' or 'child\*', for example over 1200 in the *Hampshire Telegraph*, compared to 140 for 'infant mortality'. These dealt almost exclusively with individual deaths rather than discussing mortality at population level. The collocates for these query results were examined. Causes of death were mentioned frequently, but produced little new information about the factors most likely to cause infant deaths. Accidental or suspicious deaths were more prominent in reports than their share of mortality would justify, thanks to newspapers' reliance on coroner's reports (only conducted on accidental or suspicious cases), and their propensity to select the more sensational

stories for publication. In a search for further ways of discussing infant mortality without using the precise phrase, the collocates of ‘infant’ and ‘mortality’ were examined. Newspapers were found to use expressions including ‘infantile mortality’ and ‘mortality among/of infants’, but including these in the analysis did not produce important differences in the results.<sup>xvi</sup>

The second approach was to look at the expression ‘to nurse a child’. This, and related ones, was used in a range of contexts which shed light on child welfare: breastfeeding (for which it was sometimes a synonym, though more often it was not); the quality of maternal care; scandals about baby farming, and others. Table two presents the collocation results by newspaper title.

Table two: Strongest collocates of nurs\* near child expressions, 1870-1900

<i>Hampshire Tel.</i>			<i>Ipswich Journal</i>			<i>Northern Echo</i>			<i>Western Mail</i>			
	LR	n		LR	n		LR	n		LR	n	
1	babies	11.5	18	babies	11.5	6	mothers	10.1	11	babies	11.3	12
2	baby	9.9	50	baby	10.9	41	baby	9.4	16	baby	10.3	65
3	infant	9.1	25	infants	7.9	8	child	8.4	45	mothers	9.9	15
4	mothers	8.8	8	girl	7.9	27	girls	8.3	27	infants	9.4	15
5	child	7.8	82	child	7.7	66	girl	7.5	17	infant	8.8	15
6	girl	7.2	35	infant	7.1	10	children	7.4	40	child	8.6	93
7	children	7.2	82	children	6.5	45	10s.	5.3	5			
8	girls	6.4	10	Girls	6.5	8	wife	4.7	5	girl	7.6	58
9	mother	5.4	11	mother	6	11	She	4.6	14	children	7.5	87
10	boy	5.1	10	sitting	5.8	7	total	4.5	5	girls	6.2	12
11				boy	5.2	7	put	4.5	6	boy	4.8	7
12	she	2.9	25	she	4.2	28	her	4.4	19	named	4.5	7
13	her	2.8	35	home	3.5	6	number	3.9	5	She	4.5	32
14				her	3.5	27	13	3.5	6	Site	4.5	5
15				morning	3.3	6				her	4.1	37
16				little	3	7				defendan	4	6
17										wife	4	7
18										put	3.9	9
19										saw	3.9	5
20										prisoner	3.7	7
21										little	3.6	10
22										took	3.5	8
23												
24										Mrs.	3.1	7
total			391			310			221			519

LR = Log ratio (see annex)<sup>xvii</sup>

The table shows all the statistically significant collocates: non-lexical words and two errors excluded<sup>xviii</sup>

Since the target expression 'nurs\*' was already constrained by the requirement of proximity to one of the expressions 'child, children, infant, infants, baby, babies, boy, boys, girl, girls', it is unsurprising that these expressions dominate the collocates.

The main findings from this table of collocate strength are that: the discourses of the different titles were quite similar; babies predominated; mothers also featured, but less so in the *Ipswich Journal*; and the discussion was strongly gendered, with feminine nouns and pronouns dominant. The appearance of the expressions '10s.' (ten shillings), 'number' and '13' among the significant collocates in the *Northern Echo* suggest the presence of quantifying discourses absent from the other titles: these concern wage rates nurse girls could get at hiring fairs, or statistics of how many nursing mothers (and other groups) there were in workhouses. The presence at a significant level of 'defendant', 'prisoner', and, perhaps, 'saw' (verb), only in the *Western Mail* suggest a stronger emphasis on crime reporting there. This could reflect no more than the title's newsgathering strategy – relying on the cheap and convenient method of court reporting will have helped make the *Western Mail's* ambition to cover all of Wales more affordable.<sup>xix</sup>

The key to better understanding the discourses being constructed by the use of these collocates is to examine the concordance lines around them. First, some unexpected entries in the list can be quickly explained. 'Sitting' always appeared when a person was sitting nursing a child, the most comfortable position for doing so. 'Put' almost always occurred when a child was 'put out to nurse', a phenomenon discussed below. Little importance can be attached to the fact these words achieved

significance in some titles and not others: numbers were small in every case. 'Site' is produced mainly by OCR errors.

Thematic groups of collocates were identified, including terms for a baby ('baby, babies, infant, infants'), terms for a child of any age ('child, children, boy, boys, girl, girls') and terms for an adult female relative ('mother, mothers, wife'). The concordance text around each group was examined in turn in search of patterns of discourse. This included sorting the concordance lines alphabetically on the word two before the target, one before, one after and two after, to help elicit any patterns. Two were noted by this method: 'nurse child', which meant a child sent away from its mother to be nursed by someone else ('put out to nurse'), and 'nurse girl(s)', girls who nursed one or more of someone else's children. These are discussed below.

Most of the concordance lines mention that someone is nursing only as context to their main point and we learn little or nothing about the nature of the nursing. This main point is often a crime: 162 cases involving a crime were identified in all, of a total of 1441 concordance lines examined. For example:

AGGRAVATED ASSAULT. – At the Roose petty sessions, on Saturday, William Hughes, a farm servant, was charged with beating Ann Evans. The complainant threw stones at the defendant, who was lying in bed at midday on a Sunday. The defendant came after the complainant, who was nursing a baby at the time, and seized her by the hair, and beat her with some severity. The Bench fined the defendant £1 and costs.<sup>xx</sup>

HUSBAND AND WIFE SEPARATED. – ... since the last child was born [Alfred Bryant] had treated [his wife Jane] badly, and had threatened "to do" for her. He had struck her on more than one occasion: that was how she

obtained her black eye. When he returned home on Saturday to dinner she was nursing the baby, and he slapped her face and went out again. He returned about four o'clock and struck her before any words had passed between them.<sup>xxi</sup>

Cases like these would be of interest to the student of the history of domestic relationships, crime or crime reporting, but more interpretative effort is needed to shed any light on child welfare, for example by illustrating the circumstances in which the new legal matrimonial institutions of separation and maintenance were used in this period. The frequency with which a woman mentioned in the papers for an unrelated reason happened to be nursing a baby is a reminder of high fertility rates which meant that women of childbearing age were nursing a child for a much larger proportion of their time than today.

Crime reports draw attention to two qualities of newspaper sources which have to be borne in mind. Firstly, copy could be obtained cheaply and easily by attending the police court or petty sessions, so stories about crime attain greater prominence in the columns than personal experience of crime had in everyday lives. The coroner's court was also easy to report, so unnatural or suspicious death is also given extra prominence. Secondly, editors knew that the shocking was good for circulation. The allegations of cruelty by nurse girls towards their charges (slightly commoner overall than allegations of domestic violence by husbands towards wives) are good examples:

A NURSE GIRL'S CRIME. At the Old Bailey, today, Isabella Husher, 16, nurse girl, was charged with attempting to murder a girl named Lilian Kirk, aged four ... It was alleged that the accused, who had previously been

remonstrated with for striking the child, locked her in a box, and when discovered she was almost suffocated.<sup>xxii</sup>

Such stories could attract attention because of some readers' anxiety about what the nurse girl they employed might be doing. Many of the crime stories set out to satisfy a fascination with the horrifying and pitiable. Cases of infanticide (easily noticed by a reporter at the coroner's court) were regularly reported.<sup>xxiii</sup>

In a similar vein, the four titles reviewed here all entered into the periodic nationwide moral panics about baby farming. There were two main discourses on this, one critical of the baby-farmers for being driven by income and taking too many children to care for them properly, and another critical of parents for using baby farming as a way to dispose of an unwanted child (since its chances of survival with a baby farmer were low) while minimising guilt and risk. Like crime reports, these stories help show how child welfare was conceptualised. Appearing only after 1867, they are evidence for an increasing elite interest in examining and regulating the childrearing practices of the working classes. These stories, besides condemning baby-farming, carried a generalised message that childrearing was under scrutiny, reinforcing some of the more specific messages discussed next.<sup>xxiv</sup>

When they were not being nursed by their mothers or by paid nurse girls, infants were very often nursed by older siblings. This was such a widespread practice before 1900, as early street photography collections confirm, that it was of no interest to the writers of these papers, and is usually mentioned as context to crimes or accidents.<sup>xxv</sup>

Such accidents mainly involved burns and scalds which occurred when a baby was being nursed in front of the fire. The absence (in any of the six cases found) of



critical comment suggesting that leaving a baby in the care of a child could have contributed to the accident underlines the normality of using child carers in this period. The kitchen fire was often the only warm place in a poorer home. Including instances where no accident occurred, these corpora had 16 instances of nursing by the fireside, emphasising the search for warmth. It was particularly valued for the sick: '[a 17-month-old child's mother] was awakened by hearing a noise in his throat. She took the child downstairs and nursed him before the fire, but he died at about half-past three'. The reported comments of the MOH for Llanelli confirm the absence of winter warmth elsewhere in many homes, though his remedy was not a feasible one where the home lacked multiple fireplaces or could not afford extra coal:

Death in almost all the cases was due to diseases of the lungs. He believed the high death-rate among children could be accounted for by the cold and wet which they had been suffering from during the month, the houses being in many cases unsuited for the nursing of infants suffering from affections of the lungs. Where individual attention could not be given to the sick she [sic] was of opinion that the infant mortality could be considerably lessened if mothers recognised the importance of keeping the sick rooms warm and ventilated by placing fires in the grates.<sup>xxvi</sup>

By the 1890s there was controversy among elite commentators about whether mothers who went out to work were thereby neglecting their infants and contributing to higher infant mortality. References to maternal employment were therefore examined. All five of those which linked maternal employment with child carers came from the *Ipswich Journal* and from the period 1878-1881. The *Ipswich Journal* was a Conservative-supporting title which followed the Conservative leadership in giving only cautious support to social reforms such as mass education. This may explain

the presence of a discourse not found in the other titles which, without attacking compulsion, pointed out the pitfalls when it failed to recognise the need for children to do some work, notably for girls to stay at home and nurse a younger sibling. The paper's line was very much that of the Mayor of Sudbury (Suffolk), whom it quoted:

Frequently there were several little children, and the mother was engaged in weaving or other employment in-doors or from home, and so frequently required the services of the eldest or the second daughter to nurse the children and attend to smaller children and the house. The parents said that if these girls were compelled to attend school regularly the mother would have to give up her work. The Mayor said this would be very hard, and great judgment and discretion were required to deal with these cases.<sup>xxvii</sup>

The other titles did comment occasionally on the need to reconcile girls' school attendance with nursing a baby at home, but without making the link with working mothers.<sup>xxviii</sup>

With the greater elite scrutiny of childrearing went a growing propensity to criticise mothers, holding them responsible for each child welfare problem unearthed by social investigation. Our titles provide examples of two ways in which child welfare questions were opened up in this period: the 'wrenching propaganda' of the London Society for the Prevention of Cruelty to Children, and social investigations in which an elite commentator reported his or her observations on visiting a poor district and seeking out the most spectacular deprivation or neglect they could find. In these titles, critical accounts of this kind first appear in 1889 and are quite sparse: two or three examples in most of the titles and five in the *Hampshire Telegraph*.<sup>xxix</sup>

The appearance of these reports was part of a contemporary national discourse about the need for children to be rescued from the effects of poverty, squalor and neglect. Indeed some of our provincial titles described conditions in London for local readers: one message was that London was a wicked city and local people were less cruel than Londoners. Some reports, however, were local. The themes are limited: homes nearly bare of furniture and food, children dressed in rags and infested with vermin, and, most frequently, children whose feeding was neglected by mothers, and sometimes fathers, due to drunkenness. Two *Hampshire Telegraph* examples are from fiction columns, one a child's writing competition, showing how some child readers, at least, had internalised this discourse. In this example, Ethel Wright, aged 13, won the shilling second prize for a short piece enjoining readers to treat the poor with kindness, which contained the lines:

In a five storey tenement house you might see an anxious, weary mother nursing a tiny baby, and gathered around her knee, five or six hungry children. The mother struggles and tries, but can hardly keep herself and her children alive.<sup>xxx</sup>

Interestingly Ethel's writing contains none of the criticism of the poor for bringing their woes upon themselves which characterises much contemporary adult writing.

The secondary literature reports that there was a groundswell of social investigation and comment, and no doubt this groundswell was perceptible to the well-informed contemporary reading the right journals. The present analysis of local newspapers suggests, however, that reports of social investigation like the examples just quoted were a fairly rare genre in rural local newspapers before 1900. Child neglect was, however, sometimes mentioned in court reports, as we shall see.<sup>xxxi</sup>

The historiography shows that contemporaries made a number of connections between milk – the third target expression examined – and infant mortality, arguing for example that breast milk was safer and more nourishing than cows' milk, that bottle feeding was associated with mortality from diarrhoea, and that tuberculosis could be transmitted (to people of all ages) in infected cows' milk. The four titles were therefore examined to study the text around references to milk. The numerous instances contained in adverts were excluded. Instances of 'milk' within three tokens of one of the expressions for 'child' were examined: in this case hits near the words 'mother' and 'mothers' were also included in order to capture more references to breastfeeding. The concordance lines around every instance of 'milk' near the child/mother terms were examined.<sup>xxxii</sup>

The 148 hits were distributed across the four titles reasonably evenly: *Hampshire Telegraph* 42, *Ipswich Journal* 37, *Northern Echo* 20 and *Western Mail* 49. In analysing these it is necessary to recall the earlier observation that newspapers found it convenient to gather news from the coroner's court. About half the instances come from such a report. This skews the subject matter: these instances are talking about the approximately one in seven infants who died, not the majority who survived. This means that we cannot treat the cases as typical, for example of infant diets. We can, however, draw conclusions about the writers' beliefs concerning causes of infant mortality, and about the discourses which dominated press reporting of the subject. Coroners focussed on what they were required to discover: what went wrong and whether someone was culpable. For example:

IMPROPER FOOD FOR CHILDREN. - The Ipswich Borough Coroner on Tuesday evening held an enquiry ... into the death of an infant named Alfred Fry, the illegitimate son of Sarah Fry ...at the house of Mrs. Moss (who had

charge of the child) .... Sarah Fry, aged 19 years, stay-hand at Messrs. Sewell's Factory ... stated that the child was born on November 8th last, in the Ipswich Workhouse.<sup>xxxiii</sup>

She ... put [the child] out to nurse with Mrs. Moss, ... resuming her work at the factory. ... Moss ... said the child had been suffering from the diarrhoea since it had been with her, for which she occasionally gave it a powder.

Witness fed the child on milk, milk biscuits, and rusks. ... Mr. J. R. Staddon, surgeon, said ... the food that the woman was giving it was improper for one of [its] age ... likely to increase or to cause diarrhoea. ...

After some remarks by the Coroner on ... the common and serious error [of] giving children under six months old farinaceous foods, the Jury returned a verdict in accordance with the medical evidence, and added that they considered that Mrs. Moss erred through ignorance in feeding the child.<sup>xxxiv</sup>

Most reports from the coroner's court follow this form, and this example illustrates a number of typical features, which will be discussed further: criticism of giving starchy food too early, diarrhoea, and the involvement of a doctor. Other features of this case such as the illegitimate child, the workhouse, and the mother's work, are less typical but by no means unique.

Coroners had to determine whether someone was culpable for an infant's death. This makes their reports an exception to the general observation previously made that the possibility of neglect was discussed only rarely. Another place where it did arise was when prosecutions were brought for cruelty to children, which became more frequent through the 1880s and especially once the 1889 Prevention of Cruelty

to Children Act was in force. The establishment of the National Society for the Prevention of Cruelty to Children, also in 1889, was a further factor in bringing allegations of neglect to light.<sup>xxxv</sup>

Other themes which emerged in text about neglect included a failure to call a doctor promptly to an infant who appeared to be wasting. This provides useful evidence about social expectations of the medical care every family should obtain. A case from the *Ipswich Journal* illustrates how failing to call a doctor became clear evidence of neglect:

There was no doubt, [the coroner] thought, there had been neglect, for the child had died from want of nutrition; but if the neglect had arisen from ignorance on the part of the parents, they had not committed any offence. They must all feel there was distinct neglect in not calling in a doctor. The parents, who saw the child getting worse day after day, and month after month, could not fail to know a doctor was required, and if he had been called in he would have put an end to the [feeding with] bread sop.<sup>xxxvi</sup>

While not identical with neglect, the allegation of maternal ignorance shares with it an attack on the capacity of the mother. Examining text around 'milk' produced a good deal of discussion about the suitability of other foods and the age at which they should be introduced. At times this amounted to a straightforward attack on mothers or other carers for giving infants the wrong food, sometimes resulting in their deaths. For example, 'since [her mother's death] the infant had been fed mainly on tea and biscuits ... Mr. T. Rowle, surgeon, of Titchfield, deposed that he had cautioned the [infant's carer, her older sister] that the child ought to be fed upon milk, but the diet remained unchanged until the infant was placed solely under his care.'<sup>xxxvii</sup>

The fact that this is an elite discourse blaming mothers of lower social class is confirmed by examining who the speakers are. While instances are mentioned where a neighbour is the person commenting on unsuitable diet, it is normally a doctor. Another elite commentator is the 'lady' who wrote the advice column in the *Hampshire Telegraph*, which mentioned infant feeding on at least two occasions. While she demonstrates an understanding that the milk she recommends may be an expensive item for the poorest families, she does not hesitate to blame the introduction of unsuitable foods on ignorance or laziness, and mentions the concurring views of two coroners.<sup>xxxviii</sup>

Another theme which emerges is the recommendation of breastfeeding. Comments in praise of breast milk mainly dwelt on its having the composition best suited to infants' needs. A further argument was put forward by a MOH during the 1890s, when long hot summers are often said to have contributed to higher rates of diarrhoea and higher infant mortality.<sup>xxxix</sup>

INTERVIEW WITH THE MEDICAL OFFICER. One of our representatives asked Dr. Walford on Tuesday night what were the mothers to do. "There has been a good deal of diarrhoea amongst infants," said the doctor. "The temperature has been high, and milk which has not been well and carefully kept would produce diarrhoea. "Can you suggest a remedy?" asked our representative. "Mothers' milk", came the laconic reply. "That is not always available." "That is so, but if a mother can rear her baby there would be little danger, in spite of the heat. If she cannot suckle the child herself the milk given to the child should be boiled, because that would destroy any germs of disease." There is no doubt that the intense heat during August sent up the death-rate, not only in Cardiff, but throughout the country.<sup>xl</sup>

Further light is shed by the fourth target expression, the cause of death most commonly recorded for infants in this period. Considerable caution is required: among other problems, nineteenth century doctors did not record the cause of infant deaths with much precision. Most infant deaths ascribed a specific cause were placed in a few broad categories, above all 'diarrhoea'. However while historians are rightly sceptical about the accuracy of infant cause of death recording on death certificates, the approach of this study, to examine how newspapers discursively constructed infant mortality, is worth applying to the ways they described the causes of infant death.<sup>xli</sup>

It turns out that 'diarrhoea' is mentioned in connection with children 109 times in our corpora, not always fatally. The instances where death does not result add to the understanding we have gained from demographic analysis, which only has death registrations to work on. Thus we learn from the *Ipswich Journal* about the terrible burden of disease among the living (and the strains on medical services) from one of the recurrent summer diarrhoea epidemics, in this case in 1884:

THE DIARRHOEA EPIDEMIC. -With the daily increasing heat, the diarrhoea epidemic which developed with the advancing summer has assumed an alarming character, and the number of children who, from the apparent enjoyment of the best of health on one day, have been reduced to a most dangerously critical state on the next, has become most serious. At the commencement of last week, when a large number of infants as well as elderly persons were prostrated with the malady, very many of the medical men were kept in activity which allowed little opportunity for rest, but with the daily advance of the disease, the additional work imposed has become most tiring. It is estimated that there are about 2,000 children prostrated with



diarrhoea at the present moment, and of this alarming number a large percentage is of the worst form, viz., choleraic diarrhoea.<sup>xlii</sup>

The four titles differ in their treatment of child welfare. Promotion of breastfeeding was commonest in the *Hampshire Telegraph*, which was also somewhat more likely to air the other concerns of the new infant welfare movement, such as the insanitary nature of long-tube feeding bottles, and the harmful effects of large families on child welfare. The recommendation to breastfeed is, however, one example of titles sharing copy (or perhaps of plagiarism): identical articles headed 'Health in the Nursery' appeared in the *Hampshire Telegraph* and the *Ipswich Journal* in 1880. The *Western Mail* and the *Ipswich Journal* ran some stories of their own promoting breastfeeding.<sup>xliii</sup>

The *Ipswich Journal's* conservative reluctance to embrace legislative reform such as universal compulsory education unreservedly has already been noted. This did not make it uninterested in child welfare, but rather led it to espouse improvement via the reform of individual parents' habits, not public institutions. The case of the *Western Mail*, another conservative title, has important similarities. This latter also dwelt particularly on reports of crimes by the poorer classes, as we have already seen, which inevitably tended to emphasise a blaming discourse where children had suffered harm of some kind.

No examples of promoting breastfeeding were uncovered in the *Northern Echo*: it did, however, show understanding for the problems of the mother who could *not* breastfeed:

Dr. Blackett declared that the cause of death was sucking improper food from the feeding bottle, thus distending its bowels and bringing on a fatal

convulsion. He also stated that since the introduction of infants' feeding bottles more children had died of convulsions than before. This may be so, but what can be done when a mother has no milk, has sore breasts or is so delicate that she can't suckle her child? In spite of the convulsion theory of Dr. Blackett, the inventor of feeding bottles deserves well of mankind.<sup>xliv</sup>

The absence of articles praising the virtues of breastfeeding suggests that this title ploughed a rather different furrow to the other three. It appeared to have much less to say about child welfare than them, which would tend to confirm Sian Pooley's observation about Auckland, a coal mining town typical of the *Northern Echo's* region, that 'child welfare was not conceptualised as a public priority' there.<sup>xlv</sup>

In the *Northern Echo*, neglect was nearly always associated with alcohol. For example: 'the police found about thirty empty whisky, gin and porter bottles in the house; there was no food and no milk for the baby.' Alcohol was an element in the other titles' discussion of neglect too, though not as prominently. The *Northern Echo* knew its – frequently Methodist – readers well enough to take care to cultivate Protestant Nonconformist opinion, and supported, for example, the Liberal Government's Local Option Bill of 1893. The condemnation of alcohol and its ill-effects came much easier to the *Northern Echo* than to Conservative-leaning titles like the *Ipswich Journal* and the *Western Mail* which knew the strength of brewing interests' support for that party. The four titles, then, cannot be assumed to typify north/south or Conservative/Liberal dichotomies. The landscape of their discourse is clearly determined by more than just two simple dimensions. Religion, as just seen, played a significant part, to give just one example.<sup>xlvi</sup>

A series of patterns, then, can be seen emerging from the nearly 1700 query results examined. Examples noted above include patterns linking infant mortality with poor sanitation or 'improper feeding'. These patterns objectively exist *within* the text: what, though, do they point to beyond the text – what ideologies were being transmitted by the newspapers' elite writers? And what if anything may we say about the ideological messages received by their diverse readerships?

Seven discourses about child welfare are derived here from the query results:

1. *Infant and child life is precious.* The writers made no concession whatever to the idea that a toll of mortality was inevitable and that parents, or society, should harden themselves to this reality. Crimes against infants were presented as worse than the same offence against an adult; accidents harming or killing an infant as more tragic than those to an adult.
2. *Young lives are fragile and endangered: rearing a child is hard, especially for the poor.* Children were presented as innocents encircled by dangers.
3. *Most mothers are ignorant in varying degrees, the poor most of all.* Doctors and other elite commentators were frequently quoted to this effect, especially about weaning and diet. This discourse included a great deal of what Kathleen Callanan Martin has labelled 'hard and unreal advice' from 'the Victorian poverty experts'.<sup>xlvii</sup>
4. *Some mothers, though only among the poor, are wicked.* For example they were regularly accused of murdering their baby for the life insurance money, a crime of desperation which only the poor would want to commit. This particular moral panic surfaced at national level on at least two occasions in the later nineteenth century.

5. *Mothers who go out to work are a problem. Some might need to but it is still harmful to the child: ways must be found to avoid it.* The seven references to this view all came from the *Ipswich Journal* and the *Western Mail*.<sup>xlviii</sup>
6. *The state and local elites are watching mothers and may punish them if they fall short.* Stories about extreme cases of neglect, or of infanticide, or which attacked mothers who put their children out to 'baby-farmers', helped produce this discourse.
7. *They are, however, unlikely to help them raise their child successfully.* This is an argument from absence. Reports about nurseries, crèches and philanthropy generally were rare. Apart from dealing with sanitation, the local state took little interest and elite involvement took the form mainly of critical advice to mothers.<sup>xlix</sup>

## CONCLUSIONS

The linguistic turn, then, has made us more inclined to regard the discursive construction of reality, especially by elites like newspaper writers, as an important influence on real-world matters such as how infants were looked after and how many died. Some closing remarks about how useful CBDA is in discovering the discourses expressed by a text may therefore be valuable.

The use of CBDA in historical research faces various challenges. Quantification in historical research has largely won its fight for a place at the table: at issue now is which forms of quantitative analysis are valid for which questions and how to combine their results with other perspectives. CBDA is one of a second wave of quantitative methods, better described as methods with quantitative foundations

(since any computation takes place only inside the computer, the scholar does significant *qualitative* work, and neither inputs, ever, nor results, generally, take a numeric form). CBDA shares many of these features with other tools used in the Digital Humanities, such as Geographical Information Systems. In historical research, this second wave needs to justify its existence as the first wave has. What has this case study to contribute to this?<sup>1</sup>

A first challenge historians can reasonably pose is whether ‘the systemized numerical analysis of language: seemingly one of the most ephemeral, fuzzy and context-sensitive of all objects of historical enquiry’, can produce reliable knowledge about history. This is an example of the wider post-modernist challenge to the positivism of previous scholarship. Postmodernism sees claims to objective categorisation and measurement as false, creating for example false binaries such as men’s work/women’s work, and as a reification of the ideologies of dominant groups.<sup>li</sup>

This study confirms the strength of this challenge. The less attention each quantitative analysis paid to qualitative context, the less new knowledge it brought. For example a crude count of the word ‘tuberculosis’ gives an entirely misleading result because the disease was known by other names such as ‘consumption’ and ‘phthisis’ until the 1890s, while ‘consumption’ can refer to an economic behaviour as well as a disease. These are, however, emphatically not fatal objections to numerical analysis, still less to CBDA in general. These examples simply invite the researcher to compile more sophisticated queries. Categorisation and counting of language in historical research are not intrinsically flawed: just contestable, with each scholar’s methods subject to detailed criticism.

A related issue is whether the data are of high enough quality to give reliable results. This study found that comparisons between the frequency with which different papers mentioned a target expression were unreliable because variations in the quality of the OCR led to varying rates of false negatives (in which no hit was found though the expression was present) between titles. This inability to draw conclusions from the rates at which different titles referred, say, breastfeeding frustrated the original aim of looking for evidence about regional variations in attitudes to child welfare. On a more positive note, a forthcoming Lancaster University PhD thesis by Amelia Joulain examines the implications of OCR for collocation statistics with generally reassuring conclusions.

A second challenge is Le Roy Ladurie's criticism of the historian whose 'computer told him the obvious', a charge which could justly be levelled at some recent work. This is particularly the case with studies which, whatever the quality of the computer science, lack the expert knowledge of the historical subject matter which would, for instance, allow better categories to be used. CBDA finds patterns in text around target expressions selected by the historian: how far do its findings do any more than confirm the historian's (and historiography's) hunches? Again, this study provides some support for such a challenge. It is true that ranking the collocates of a target expression such as 'nursing' produced mostly obvious or irrelevant findings: the words most strongly attracted to 'nursing' were 'baby', 'babies' and 'mothers'.<sup>lii</sup>

Once more, though, this is not a fatal objection to CBDA. In an earlier paper, Porter and colleagues were able to demonstrate that another corpus-based technique, geographical text analysis, did produce significant new knowledge about mortality in nineteenth century Britain. In the 'nursing' example, some of the other collocates – words occurring more often near the target expression than in the whole corpus –

were more informative. The word 'put', 11<sup>th</sup> strongest collocate of 'nurs\*' in the *Northern Echo*, 18<sup>th</sup> strongest in the *Western Mail*, led to a large set of references to a mother 'putting a child to nurse' with someone else. So did the sorting of hits by the word after the target, showing up 'nurse child' - the infant looked after – and 'nurse girl' – the child looking after the infant (never 'nurse boy', although the papers did, using different language, mention boys nursing younger siblings).<sup>liii</sup>

This vein of discourse was a serendipitous discovery, made possible because CBDA queried my whole two billion word corpus. Of course serendipity has always been possible in the paper archive too, but the historian reading every word is scanning less material and so has fewer chances. As the 'nursing' example confirms, the benefits of corpus linguistics for the historian really start to emerge when we move beyond decontextualized quantitative findings like collocation rankings and start following up the clues they have given, using qualitative discourse analysis. To give another example, one might follow up a frequency analysis of a corpus by noting which of the expected words was absent. Hegemonic discourse can exclude disadvantaged groups by refusing to speak of them or to air their concerns, or by taking something so much for granted that it never needs to be said. Many mothers in this period reported that their household incomes, and therefore their diets, were so meagre as to endanger the health of unborn and breastfeeding children: one looks in vain for acknowledgement of this in the newspapers studied here.<sup>liv</sup>

A third challenge is how to get from the patterns in the text to its reception. What can we ever know about a historical text's effect on its long-dead readers? As Fairclough notes, this involves the text (accessible to us) interacting with the reader's own

interpretative procedures (now inaccessible). This study found occasional tantalising glimpses, via text written by a newspaper reader, such as the girl who entered the composition competition. Text by a newspaper reader (for example letters) bristles with interpretative problems though: editors were not even above making up letters they had supposedly received.<sup>lv</sup>

Widdowson is right to be sceptical: if a scholar is not analysing the practices of text production and consumption, they 'are not dealing with discourse at all but only with its textual trace. Neglect of [these], therefore, must invalidate any inferences of ideological intent based on textual evidence alone.' The historian has to place the text alongside knowledge about who read newspapers, what for, how frequently, whether they shared a paper around a group (this was common, on cost grounds) or discussed its content. Jonathan Rose, who describes his magisterial *Intellectual Life of the British Working Classes* as a 'history of audiences', has rather little to say about working-class newspaper readers, finding only that they were infrequent and often incurious. There is much more to be said: even internal evidence from our four titles points clearly to editors and proprietors *aiming* for a broad readership among the increasingly literate masses after 1870, notably in the affordably-priced *Northern Echo* (½d) and *Western Mail* (1d). Only access to surviving life-writing which mentions newspaper consumption could fill this lacuna. In the meanwhile, it cannot be claimed that CBDA tells us very much about the reception of the texts it analyses.<sup>lvi</sup>

To conclude, while CBDA has a number of shortcomings for the historian, persistence will be rewarded, even on a topic like infant welfare in which the newspapers had little direct interest. Information can be gleaned from text originally written for a different purpose. CBDA does not offer revolutionary breakthroughs or



complete answers, but does provide a refreshingly different perspective which allows triangulation on historical problems like infant mortality with other techniques such as demography and the history of the family.<sup>lvii</sup>

## Annex

### Queries

Each query was run on the whole corpus of the *Northern Echo* (which began publishing in 1870) and the *Western Mail* (which opened in 1869). Unless otherwise stated queries on the *Hampshire Telegraph* and the *Ipswich Journal* were confined to 1870-1900 to make the results comparable. The earlier print runs of the *Hampshire Telegraph* and the *Ipswich Journal* were briefly examined for any 'prehistory' of infant mortality reporting.

To exclude the text of advertisements Gale Cengage's markup, which classifies articles by broad type, was used to build restricted queries.

Search strings were chosen with a view to optimising the balance between a narrow search which minimises false positives (such as 'mortality among the infantry') and a broad search which minimises false negatives (such as 'a day nursery for infants', which the search string '(nurse|nursing)' would have missed). Each query was a proximity query returning hits where a target expression occurred within a given distance of a second expression. The distance was varied experimentally to optimise the relevance of the hits as just described.

The search strings finally employed were:

Infant mortality    infant[,s,ile]<<2>>mortality

Nursing a child    [nurs\*]<<3>>[child,children,infant,infants,baby,babies,boy,boys,girl  
,girls]

Milk [milk]<<3>>[child,children,infant,infants,baby,babies,boy,boys,girl, girls,mother,mothers]

Diarrhoea diarr\*<<6>>[child,children,infant,infants,baby,babies,boy,boys,girl, girls]

### Collocations

The collocates of each target expression were examined, one newspaper title at a time. The collocation statistic chosen uses the ratio of frequency near target expression to frequency elsewhere in the corpus, and combines this with a statistical significance filter. This statistic (called Log Ratio in CQPweb) was selected to avoid giving excessive attention to words which collocate strongly with the target but are very rare. (In software which does not offer this option, a rough and ready alternative would be to combine an effect size measure with a minimum frequency threshold.)

The collocation tables produced in this way, such as table two, list collocates in descending order of collocation strength, only including those where the collocation is statistically significant.

The log ratio collocation statistic is attractive in historical research because it keeps attention on discourses which are common. Close reading has a tendency to focus on discourses which are eye-catching and unusual. However, historians also want to know what a source such as a newspaper 'normally' says, in order to assess a climate of opinion, mental world or culture. Corpus linguistics has the potential to do this in a more objective way than close reading, and log ratio or an equivalent is the

most suitable collocation statistic for this purpose because it uses a test of statistical significance, rather than a subjective judgement, to eliminate rare results.<sup>lviii</sup>

How many collocates are returned depends in part on the window chosen: if a collocate may be within a large number of words of the target there are more collocates than if a window of two or three words is selected. The window of six words either side of the target, chosen here, helped optimise the balance between minimising false positives and minimising false negatives. The selection of a window size is ultimately a matter of judgement, and windows of 3-6 are quite common in corpus linguistics.

### Cleaning the concordance results

Devising queries that return truly relevant concordance lines is an art rather than a science. The results of a query always contain false positives which can only be weeded out by hand. For example, of an original 341 hits from the 'milk' query, only 148 were retained as being relevant to infant mortality. Most of the rejected hits were from adverts which had slipped through the Gale filter; there were also instances where the child was not consuming the milk but, for example, delivering it; the use of 'mother's milk' as a metaphor or simile, and instances referring to animals rather than humans. The following examples illustrate the excluded material:

'Six ADDITIONAL REASONS for using Horlick's Malted Milk for children'<sup>lix</sup>

'William White ... a milk boy ..., left the can and milk on the door step ... at six o'clock on Saturday morning.'<sup>lix</sup>

'the pretty stories we took in, as it were, with our mother's milk'<sup>lix</sup>

“the little [hippopotamus] born today ... has discovered, and readily makes use of its mother's milk.”<sup>lxii</sup>

### Finding patterns

This was a subjective exercise, and a higher-order cognitive task than computers can – currently – do. The results of the queries and collocations were the starting point for investigation, not the conclusion of it. Sometimes extra context around the concordance line was needed to classify it. In default mode, CQPweb presents the 12 words each side of the target. Often this was sufficient, but it was also often necessary to use the ‘more context’ option, which is very flexible and will display hundreds of words around the target if desired. In a few cases even more was needed and cross-reference was made to the relevant page in British Library Nineteenth-Century Newspapers, either to overcome particularly bad OCR or to see the whole article where this added to understanding.

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<sup>i</sup> The research leading to these results has received funding from the European Research Council (ERC) under the European Union’s Seventh Framework Programme (FP7/2007-2013) / ERC grant “Spatial Humanities: Texts, GIS, places” (agreement number 283850). Acknowledgements are due in particular to Andrew Hardie, Paul Baker, Catherine Porter, Amelia Joulain, Laura Paterson, and to an anonymous reviewer. Tony McEnery and A. Wilson, *Corpus Linguistics* (Edinburgh, 1996), 1; Paul Baker, *Using Corpora in Discourse Analysis* (London, 2006), 2-3

<sup>ii</sup> James Mussell, ‘Nineteenth-century newspapers in the digital age’, *Journal of Victorian Culture* XVII (2012), 221-21; Bob Nicholson, ‘Counting culture; or, how to read Victorian newspapers from a distance’, *Journal of Victorian Culture*, XVII (2012), 238-46; *ibid.*, ‘The digital turn’, *Media History* XIX (2013), 59-73; Tim Hitchcock, ‘Confronting the digital, or how academic history writing lost the plot’, *Cultural and Social History* X (2013); <http://gale.cengage.co.uk/british-library-newspapers.aspx>, accessed on 17 November 2016;

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<sup>iii</sup> Andrew Hardie, 'CQPweb - combining power, flexibility and usability in a corpus analysis tool', *International Journal of Corpus Linguistics* XVII (2012), 380-409; Laurence Anthony (2014). AntConc (Version 3.4.3) [Computer Software]. Tokyo, Japan: Waseda University. Available from

<http://www.laurenceanthony.net/>

<sup>iv</sup> Baker, *Using Corpora*, 10-17; Luke Blaxill, 'Quantifying the language of British politics, 1880–1910', *Historical Research* LXXXVI (2013), 313-41, here at 329. This article illustrates the use of AntConc by a historian; Norman Fairclough, *Language and Power* (London, 1989), 54

<sup>v</sup> Laurel Brake, 'Half full and half empty', *Journal of Victorian Culture* XVII (2012), 222-29, here at 222-3.

<sup>vi</sup> D Biber, *Variation in speech and writing* (Cambridge, 1998), 4; Baker, *Using Corpora*; Fairclough, *Language and Power*

<sup>vii</sup> Michel Foucault, *The Archaeology of Knowledge* (London, 1972): 49; Fairclough, *Language and Power*, 17; V. Burr, *An Introduction to Social Constructionism* (London, 1995), 48; Baker, *Using Corpora*, 18

<sup>viii</sup> For recent overviews of infant mortality literature, see Simon Szreter and Anne Hardy, 'Urban fertility and mortality patterns' in *The Cambridge Urban History of Britain*, Martin Daunton, (ed.) (Cambridge, 2000), 629-72, and Eilidh Garrett, Chris Galley, Nicola Shelton, and Robert Woods, eds. *Infant mortality: a continuing social problem*, (Aldershot, 2006); for rural infant mortality see Paul Atkinson, Brian Francis, Ian Gregory and Catherine Porter, 'Patterns of infant mortality in rural England and Wales, 1850-1910', *Economic History Review* (in press)

<sup>ix</sup> Baker, *Using Corpora*, 25-31; Blaxill, 'Quantifying the Language', 232-3

<sup>x</sup> Atkinson et al, 'Patterns'; Political allegiance is sometimes described Gale Cengage's metadata, otherwise it was determined by examining editorial matter near the dates of General Elections.

<sup>xi</sup> Hardie, 'CQPweb'. Historians with limited resources or computing skills have produced worthwhile results without annotating their corpus with all the apparatus used in linguistic analysis; Examples of contemporary literature include George Newman, *Some notes on the housing question in Finsbury*. (London, 1901), available at <http://wellcomelibrary.org/moh/>; *ibid.*, *Infant mortality: a social problem* (London, 1906); 39th Annual Report of Local Government Board, 1909-10, Supplement to Report of Board's Medical Officer, Containing a Report on Infant and Child Mortality. PP(1910), XXXI;

<sup>xii</sup> These reports are digitised and fully searchable at [www.histpop.org](http://www.histpop.org)

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<sup>xiii</sup> *Ipswich Journal*, 11 April 1868; Vaccination was blamed, for example, in the *Ipswich Journal*, 27 January 1877. For resistant discourse, in which speakers oppose a hegemonic view, see e.g. Baker, *Using Corpora*, 14-15

<sup>xiv</sup> *Western Mail*, 15 December 1876; *Northern Echo*, 24 October 1878

<sup>xv</sup> Deborah Dwork, *War is good for babies and other young children : a history of the infant and child welfare movement in England, 1898-1918* (London, 1987)

<sup>xvi</sup> See annex for a discussion of the choice of a collocation window of +/-6

<sup>xvii</sup> Andrew Hardie (*forthcoming*), A dual sort-and-filter strategy for statistical analysis of collocation, keywords, and lockwords

<sup>xviii</sup> In each of the errors, 5 adverts were erroneously coded in the original as another type of article region so words found there were wrongly included here.

<sup>xix</sup> Laurel Brake and Marysa Demoor, eds. *Dictionary of nineteenth-century journalism in Great Britain and Ireland*, (Gent and London, 2009), 670-1

<sup>xx</sup> *Western Mail*, 11 December 1871

<sup>xxi</sup> *Ipswich Journal*, 24 February 1900

<sup>xxii</sup> *Hampshire Telegraph*, 12 January 1895

<sup>xxiii</sup> For example, *Northern Echo*, 27 July 1874

<sup>xxiv</sup> George K Behlmer, *Child abuse and moral reform in England, 1970-1908* (Stanford, 1982); For examples of baby farming reports, see *Western Mail* 8 July 1870, *Hampshire Telegraph*, 17 June 1882, *Ipswich Journal* 14 November 1885, *Northern Echo* 16 March 1895

<sup>xxv</sup> A good example is Leodis: a photographic archive of Leeds, <http://www.leodis.net/> (accessed 22 December 2016)

<sup>xxvi</sup> The 17-month-old child is in the *Ipswich Journal*, 27 December 1879; MoH quoted in the *Western Mail*, 5 January 1892

<sup>xxvii</sup> Carol Dyhouse, 'Working class mothers and infant mortality in England, 1895-1914', *Journal of Social History*, XII (1978), 248-67; *Ipswich Journal*, 9 October 1880

<sup>xxviii</sup> *Hampshire Telegraph*, 29 March 1871, *Western Mail*, 9 April 1874

<sup>xxix</sup> Kathleen Callanan Martin, *Hard and unreal advice: mothers, social science and the Victorian poverty experts*, (Basingstoke, 2008), 134-158; Behlmer, *Child Abuse*, 63, 78, 109. The London Society was established 1884 and became the *National Society* in 1889.

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<sup>xxx</sup> Contemporary writing referring to child neglect included Andrew Mearns' *'Bitter Cry of Outcast London'* (1883) and the first volumes in Charles Booth's *Life and Labour of the People* (appearing from 1889); See also Judith Walkowitz, *City of dreadful delight: narratives of sexual danger in late-Victorian London* (London, 1992); *Hampshire Telegraph*, 23 January 1897

<sup>xxxi</sup> Behlmer, *Child Abuse*

<sup>xxxii</sup> P. Atkins, 'White poison - the social consequences of milk consumption, 1850-1930', *Social History of Medicine*, V (1992): 207-27.

<sup>xxxiii</sup> For rates of infant mortality see F. B. Smith, *The people's health, 1830-1910*, (London, 1979), 65. A stay-hand worked at making stays: fifteen Ipswich women are listed as stay hands or stay factory hands in 1891 Census Enumerator's Books (accessed via I-CeM at [http://www.essex.ac.uk/history/research/icem/access\\_to\\_data.html](http://www.essex.ac.uk/history/research/icem/access_to_data.html) on 24 November 2016)

<sup>xxxiv</sup> *Ipswich Journal*, 24 June 1893

<sup>xxxv</sup> Behlmer, *Child Abuse*, 98-110

<sup>xxxvi</sup> *Ipswich Journal*, 24 January 1891

<sup>xxxvii</sup> *Hampshire Telegraph*, 8 October 1881

<sup>xxxviii</sup> *Hampshire Telegraph*, 17 April 1886

<sup>xxxix</sup> Robert Woods, *The demography of Victorian England and Wales* (Cambridge, 2000)

<sup>xl</sup> *Western Mail*, 13 September 1899

<sup>xli</sup> Anne Hardy, 'Death is the cure of all diseases': using the General Register Office cause of death statistics for 1837-1920', *Social History of Medicine* VII (1994) 472-92

<sup>xlii</sup> *Ipswich Journal*, 12 August 1884

<sup>xliii</sup> *Hampshire Telegraph*, 20 November 1880; *Ipswich Journal*, 23 November 1880

<sup>xliiv</sup> *Northern Echo*, 2 April 1873

<sup>xliv</sup> Siân Pooley, "'All we parents want is that our children's health and lives should be regarded": child health and parental concern in England, c. 1860-1910', *Social History of Medicine* XXIII (2010), 546.

<sup>xlvi</sup> *Northern Echo*, 4 August 1891; For the *Northern Echo's* support for religious nonconformists see for example the editorial 'An Appeal to Nonconformity' of 7 March 1893. Local Option was the power to hold local votes on laws to restrict alcohol sales.

<sup>xlvii</sup> Callanan Martin, *Hard and Unreal Advice*

<sup>xlviii</sup> Dyhouse, 'Working Class Mothers'



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<sup>xlix</sup> Christopher Hamlin, *Public health and social justice in the age of Chadwick: Britain 1800-1854* (Cambridge, 1998)

<sup>l</sup> For earlier doubts about the potential of quantification, see T. H. Rabb, 'The development of quantification in historical research', *Journal of Interdisciplinary History*, XIII (1983), 591–601, and Lawrence Stone, 'The revival of narrative: reflections on a new old history', *Past & Present*, XXV (1979), 3–24

<sup>li</sup> Blaxill, 'Quantifying the Language', 318, footnote 28

<sup>lii</sup> Emmanuel Le Roy Ladurie, *Le territoire de l'historien* (Paris, 1973), 11.

<sup>liii</sup> Catherine Porter, Paul Atkinson, and Ian Gregory, 'Geographical text analysis: a new approach to understanding nineteenth-century mortality', *Health and Place* XXXVI (2015): 25-34

<sup>liv</sup> Blaxill, 'Quantifying the Language', 330-1, provides further examples of serendipitous discovery using corpus linguistics; On the interpretation of absences see Baker, *Using Corpora*, 19; for the effects of poverty see Margaret Llewelyn Davies, ed., *Maternity: Letters from working women* (London, 1915; 1978) passim

<sup>lv</sup> Fairclough, *Language and Power*, 141-2

<sup>lvi</sup> H. G. Widdowson, 'On the limitations of linguistics applied', *Applied Linguistics* XXI (2000), 3-25, here at 21-2; Jonathan Rose, *The intellectual life of the British working classes* (New Haven, 2001), 343-4

<sup>lvii</sup> Widdowson, 'Limitations', 23-4

<sup>lviii</sup> Baker, p. 88

<sup>lix</sup> *Western Mail*, 16 September 1898

<sup>lx</sup> *Hampshire Telegraph*, 27 January 1900

<sup>lxi</sup> *Northern Echo*, 23 July 1870

<sup>lxii</sup> *Ipswich Journal*, 12 November 1872