APPENDICES

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1 Appendix for Introduction and Literature review

The following appendix presents additional content related to the literature review and introduction.

1.1 Impact of weight stigma on children

This appendix section addresses how weight stigma impacts children specifically. The purpose of this section was to provide further context to the researcher project.

Stigma is persistent among children as much as the general population. A meta-analysis conducted by M van Geel et al. (2014) has investigated the relationship of bullying in association with the weight status of children (Geel, van et al., 2014). The authors have collated a total of 14 articles (N = 55 231) on bullying and children with overweight status and 16 articles (N = 58 520) on bullying and children with obesity (Geel, van et al., 2014). The authors have investigated this relationship in western high-income countries and only among children who had normal weight category or excess. Using odds ratios, the author found that there was a significant association among both children who had overweight (OR = 1.19 [1.10 – 1.29]) and obesity statuses (OR 1.51 [1.32 – 1.71]), and experience of being a victim of bullying. The meta-analysis did not observe different results for self-report and other measures but did observe an indication of publication bias in the context of obesity association. Nonetheless, the result indicates that those children with higher weight may be more likely to be bullied (as their weight increases) and thus impacted by weight stigmatisation or weight self-stigmatisation.

Weight stigma in children has a lot of unfavourable consequences. Particularly concerning is that since obesity carries over into adulthood (Kumar & Kelly, 2017), so does weight stigmatisation and, therefore, the detrimental impact over sensitive periods such as adolescence (Blakemore & Mills, 2014).

The study by Jendrzyca et al. (2016) explored important factors associated with weight stigma in children – namely, eating behaviours and body dissatisfaction. The authors have recruited 33 elementary schools and 1619 children (6.0% underweight, 81.1% normal weight, 7.7% overweight, 5.2% obesity) aged 6 – 11 years old in Germany (Jendrzyca & Warschburger, 2016). The authors focused on children with overweight or obesity status compared to normal weight and excluded underweight status (Jendrzyca & Warschburger, 2016). Children responded on scales measuring weight stigma, disordered eating, external eating, disordered eating, and body dissatisfaction (among measures of SES, BMI, and such). The novel aspect of the study was that the authors have attempted to provide a causal explanation of the factors involved in disordered eating. The results confirmed the causal effect (model fit for girls [RMSEA = 0.035; CFI = 0.963; TLI = 0.953, SRMR = 0.055] and boys [RMSEA = 034; CFI = 0.962; TLI = 0.952; SRMR = 0.048]) of weight status and stigma on body dissatisfaction, disordered, restrained, and external eating in one year from the baseline measurement (Jendrzyca & Warschburger, 2016). The model defined by the authors seemed more appropriate for girls than boys; however, both genders had high scores on body dissatisfaction given their overweight or obese weight status.

Finally, in a systematic review by Farhat et al. (2015), the authors have investigated the relationship between adolescents' risk behaviours and weight stigmatisation. The authors have reviewed risk factors such as drug use and smoking and summarised that the most

common factors associated with overweight and (especially) obesity were risky sexual behaviours and bullying experiences (Farhat, 2015). Furthermore, the study showed that children may suffer from additional risks due to weight stigmatisation (self or experience of bullying).

2 Appendix for Methods

The following appendix presents additional content related to methods across the studies.

2.1 Email from the Health Improvement Commissioner

The following email sent by the Health Improvement Commissioner provides the rationale for leaving the second design choice that was proposed to the Suffolk CC:

"I met with CYP today to discuss whether they would be able to feedback results to parents for the 30 schools selected across both Reception year and Year 6.

Unfortunately, after lengthy discussions, it has been decided that we cannot separate the results for the 30 schools to be in a different format of the letter. The reasons behind this are the capacity of staff based on staff shortages and due to the procurement process the ability to work on any new programmes outside of their current contracted remit. The system itself for the generation of letters is complex and based on the quick turnaround of measurement to feedback letter there are also additional concerns that each parent receives their feedback which formatting letters in between may jeopardise.

I am sorry but I can at least offer a potential alternative option to explore with CYP, that we send all Reception year results measured from January onwards your feedback letter. The current Suffolk letter for Year 6 contains the links you arranged for feedback regarding the letters and with the Reception year letter being adopted to your version would this still enable you to review the effectiveness of the new template?" (Email received on November 8th, 2019)

Subsequently, the following response from the Health commissioner explains the contracted remit at the time:

In April 2019 CYP began the overall provision of 0-19 services across the whole of Suffolk.

Before this the services were split into two providers based on location. East Coast Community Health (ECCH) were responsible for Waveney / Lowestoft, whilst CYP covered East and West Suffolk.

The 0-19 Healthy Child Service is commissioned by Public Health Suffolk. In 2018, the Commissioners tendered for a whole county service which was awarded, after a competitive process, to Suffolk County Council, Children and Young People's Services. Representatives from the CCGs across Suffolk and other partners sat on the decision panel.

The new specification for the service reflects both the national Healthy Child Programme and Suffolk priorities for reducing inequalities and protecting vulnerable people. The views of Suffolk CCGs, parents, young people, and other partners were taken into account. The contract fee, in line with other reductions in public sector funding, is 10% less than the previous contract. (Email received on February 2nd, 2020)

This response was received as the response to my request to provide a further rationale behind the decision at the time.

2.2 Study 1 – Materials

2.2.1 Sample Size

The following sections provide information about sample size and sample size calculations for Study 1.

Ninety-two (out of 152; 61%) LGA representatives completed the online survey, 23 additional LGA have also provided documents (115 LGA), including parental results letters. Additionally, 303 results letters (across healthy weight, underweight, overweight, and very overweight categories) were collected from 115 LGA who provided any documents.

2.2.1.1 The sample size of the survey

The total number of LGA in England was 152, which estimated the population size for a finite population. Therefore, the sampling size was based on conventional sample size estimations for a finite population where the margin of error was $z \times SE \leq 0.05$ (up to 5%) and population proportion in the population was assumed to be 0.5, which was a conservative approach – as explained in the paragraph below (Diez et al., 2014; Ramachandran & Tsokos, 2015, p. 181). The finite population correction formula was applied on the calculated sample size from the infinite population formula based on the margin of error ($ME = z \times SE$) formula (Diez et al., 2014, p. 127).

For the ME formula below, the following notation was used: $N_{infinite}$ (sample size estimate for infinite population); z^2 (confidence level), p (proportion of the population with a characteristic of interest), and ME^2 (as the margin of error). The proportion of the population with characteristics of interest may either be set at any known p from previous research or, as in this case, at 0.5 as "the worst-case" (the most conservative) estimate regarding the prevalence of characteristics of interest (Diez et al., 2014). This was selected as it was not clear how respondents in the sample would answer a given question within the survey, and there were multiple questions in the survey. Choosing 0.5 as p was the safest as it assumed equally likely responses to any question in the survey. The following calculation was performed for an infinite population:

$$N_{infinite} = (z^2 \times p \times (1 - p) / ME^2$$

$$N_{infinite} = (1.96^2 \times 0.5 \times 0.5) / 0.05^2$$

$$N_{infinite} = 0.9604 / 0.0025 = \mathbf{385}$$

The calculation regarding infinite population suggested a sample size of 385 for ME of 0.05 at an unknown proportion of 0.5 and a confidence level of 95%. However, as the population size was known, I needed to apply the correction formula for the finite population.

The following notation was used to apply the correction: $N_{infinite}$ (required sample size estimate of the infinite population); $N_{corrected}$ (required sample size estimate of the finite population), $N_{actual\ population\ size}$ (the actual sample size of the population). The correction for the finite population was then applied to the calculated sample size:

$$N_{corrected} = N_{infinite} / (1 + ((N_{infinite} - 1) / N_{actual\ population\ size}))$$

$$N_{corrected} = 385 / (1 + ((385 - 1) / 152))$$

$$385 / 3.526 = 109.18$$

$$N_{corrected} = \mathbf{110}$$

The result of 110 indicates that the sample size should be 110 out of 152, which stands for at least 72.368% of the population with a confidence level of 95% and a margin of error no larger than 5%. If I theoretically assumed proportion, for example, 0.7, the estimated sample size would be 104; however, this was not the right approach because the survey included several questions, none of which had known proportions. An alternative and acceptable approach would be to increase the required margin of error, for example, to 0.1, and then the estimated required sample size would be 60 LGAs.

Since the collected sample was 92 LGAs (18 LGAs short of the required sample size for z × SE ≤ 0.05), using the formula for the margin of error (1.96 × 0.0521 = 0.102116), the expected margin of error was z × SE ≤ 0.10 for the final sample. The findings based on the responses in the survey had approximately 10% of random error deviation from the observed values 95% of the time.

2.2.1.2 The sample size of the letters

The letters were collected as part of the survey and freedom of information requests to selected LGAs; however, the sample size was based on convenience and estimated sample size in the previous section. The expected number of letters was assumed to be 110 × 4 = 440, but the final number of 303 letters reflects that the final sample size was short of 18 LGA (92 × 4 = 368), not all LGAs provided letters to all weight categories, some LGAs has provided what was defined as “combined” letters (i.e., the same template for every weight category was used and the only result of BMI, weight, and height changed).

2.2.2 Questionnaire – The NCMP National Survey

v4NS – The NCMP National Survey (Participant's version)

Start of Block:

2.2.2.1 Information for participants and ethical considerations

Display This Question:

If Device Type Is Mobile

Q1 You are about to see the survey that was optimised primarily for a computer device. If you are using a mobile device, please consider opening the survey again on your computer; however, if you are using a computer and this message is displayed, you can simply ignore it.

Page Break

Q2 Survey Information

You are invited to take part in a national survey to explore the National Child Measurement Programme (NCMP) practice across Local Authorities in England

This survey is part of a research project conducted at Leeds Beckett University with support from the NCMP at Public Health England.

How long does the survey take to complete?

The survey takes an average of 15 minutes per participant to complete.

Why have I been invited to take part in the survey?

You have a good understanding of the NCMP practice at one of the 152 Local Authorities in England.

What happens if I do not want to take part or if I change my mind?

Participation in the survey is completely up to you. If you wish to remove your data and withdraw your participation, you can do so at any time prior to the 30th April 2018.

What are the benefits of participating in the research for my Local Authority?

Your participation will help to share the best practice related to the process and delivery of the NCMP. I will share the results at regional meetings and workshops attended by Local Authorities, and disseminate the results in collaboration with the NCMP at Public Health England.

What are the benefits of participating in the research for myself?

If you meet the criteria to participate and complete the survey, you will automatically enter a raffle to win a place (free attendance) at the 6th Annual Weight Stigma Conference (18th - 19th June 2018) or one of two £100 Amazon vouchers.

What is the aim of the survey?

I aim to explore the process and delivery of the NCMP in your Local Authority. If you choose to take part, you will be asked to answer questions related to NCMP activities such as informing parents about the school heights and weights checks and providing feedback to parents. You will be asked to upload the most recent version of your parent's feedback letter, and other relevant documents.

What happens to data I provide?

Your data will be anonymised and stored on a password protected and encrypted hard drive at Leeds Beckett University. The study is conducted in line with Leeds Beckett University's data protection policy and all data are treated according to the Data Protection Act (1998).

Will the outcomes of the research be published?

I wish to publish the research in an academic journal, at conferences, and as part of my PhD thesis. Your data will be anonymised and it will be impossible to identify you or your Local Authority.

Are there any risks of participating in the survey? There are no expected risks of participating in the survey. If you have any concerns, please contact me or Dr Duncan Radley (Duncan.Radley@leedsbeckett.ac.uk) who is a Research Ethics Coordinator for the School of Sport at Leeds Beckett University and has provided ethical approval for this study.
Who will conduct the research?

My name is Martin Čadek and I am the Principal Investigator and a PhD student at Leeds Beckett University. I am also your main point of contact. Dr Stuart Flint is my PhD supervisor and Director of Studies.

Martin Čadek, Dr Stuart Flint

▢ I confirm that I have read the information presented above. (1)

2.2.2.2 The Survey

Q57 Do you want to see a snapshot of questions you are going to be asked in this survey before deciding whether you wish to participate? (Select "No" if you to jump straight into the survey)

o Yes (1)

o No (2)

Page Break

Display This Question:

If Do you want to see a snapshot of questions you are going to be asked in this survey before decidi... = Yes

Q58

I have selected 10 Questions (see below) that provide an overview of the survey.

1. How does [Insert name of the Local Authority] deliver the NCMP?
2. How does [Insert name of the Local Authority] or provider(s) distribute information about the upcoming school heights and weights checks to parents or carers?
3. Do [Insert name of the Local Authority] or provider(s) use the "Specimen pre-measurement letter" provided by Public Health England to inform parents or carers and their Reception Year and Year 6 Children about the NCMP school heights and weights checks?
4. Does [Insert name of the Local Authority] or provider(s) distribute any additional material besides Change4Life leaflets alongside the school heights and weights checks information?
5. How does [Insert name of the Local Authority] or provider(s) deliver the NCMP parent's feedback to parents or carers and their Reception Year and Year 6 Children?
6. Please specify the groups of parents or carers and their Reception Year and Year 6 Children that [Insert name of your Local Authority] or provider(s) target with the parent's feedback. Please check all that are relevant:
7. Does [Insert name of the Local Authority] or provider(s) deliver "proactive follow-up" to ANY parents or carers and their Reception Year and Year 6 Children?
8. How does [Insert name of the Local Authority] or provider(s) deliver "proactive follow-up" to parents or carers? Please check all that are relevant.
9. Are there any services (as part of the local healthy weight care-pathways; including universal, Tier 1, 2, and 3 services related to healthy weight; physical activity; food and nutrition) available in [Insert name of the Local Authority] for parents or carers and their Reception Year and Year 6 Children?
10. We are collating the documents that all 152 Local Authorities in England are using as part of the NCMP. This includes the:
    - Pre-measurement letter, leaflet, etc. used to provide information about the NCMP school heights and weights checks to parents or carers and their Reception Year and Year 6 Children

- Parent's feedback used to inform parents or carers and their Reception Year and Year 6 Children about the NCMP measurement results
- Proactive feedback used to follow-up with parents or carers and their Reception Year and Year 6 Children
- Additional documents that you attach alongside the NCMP pre-measurement, parent's feedback and proactive follow-up
- Healthy weight care-pathways spreadsheet or service summaries for all children in the Reception Year and Year 6.

Please send us what you are using. If you answer "Yes - Send them right now", you will be asked to send them in the next question.

If you have any questions or would like to review the whole survey before deciding to participate, please contact me at m.cadek@leedsbeckett.ac.uk.

Thank you.

Page Break

2.2.2.3 Informed Consent

Q3 Declaration of informed consent to participate in the national survey exploring the delivery of the NCMP across Local Authority areas in England

Q4 I confirm that I have read and understood the survey information, had the opportunity to consider the information, and where necessary, ask questions which have been answered satisfactorily.

o Yes (1)

o No (2)

Q5 I understand that I am under no obligation to take part in the survey and that my participation is voluntary. I also understand that I am free to withdraw from the survey for any reason and that I am not required to explain my reasons for withdrawing. I understand how to withdraw.

o Yes (1)

o No (2)

Q6 I understand that published data will be anonymised and linked to a unique reference number. To withdraw my responses after submitting the survey, I can contact Martin Čadek. I can do this up until the 30th April 2018.

o Yes (1)

o No (2)

Q7 I understand that all of the information I provide, including any information about the Local Authority I represent, will be treated in the strictest confidence and kept anonymous. I give permission for the researchers at Leeds Beckett University to have access to the information I provide.

o Yes (1)

o No (2)

Q8 I understand that the findings from the survey will be used in the publication of journal articles, reports, conference presentations and as part of a PhD thesis. I understand that neither I or the Local Authority I represent, will be named in any publications. I give my permission for the researchers at Leeds Beckett University to use my data in publications.

o Yes (1)

o No (2)

Q9 I agree to the researchers at Leeds Beckett University contacting me with a request for additional information or data.

o Yes (1)

o No (2)

Q10 I agree to the researchers at Leeds Beckett University contacting me about my potential involvement in a follow-up survey, study, or interview.

o Yes (1)

o No (2)

Q11 I agree to participate in the survey.

o Yes (1)

o No (2)

Skip To: End of Survey If I agree to participate in the survey. = No

Page Break

End of Block: Information for participants and ethical considerations

Start of Block: Identifying Local Authority and Key people

Page Break

Q12

Which local government authority area do you wish to represent in this survey? (Please select the best possible option from the list of the 152 Local Authorities below).

If you wish to represent more than one Local Authority, please complete the survey again.

▼ Barking and Dagenham (457) ... York (608)

Page Break

Q13 What is your current position (job title)?

- o Public Health England Regional Lead (1)
- o Director of Public Health (4)
- o Director of Children's Services (5)
- o Head Teacher (6)
- o Primary School Teacher (7)
- o School Governor (8)
- o General Practicioner (9)
- o Local Authority Data Analyst (10)
- o Local Authority NCMP Commissioner (11)
- o Local Authority NCMP Provider (12)
- o NCMP School Nurse Provider (13)
- o NHS Child Health Provider (14)
- o Other NCMP Provider (15)
- o School Nursing Role (16)
- o Other (specify) (17) _____

Page Break

Q14 Please provide your email address:

(Your email will be used only in case we need to reach you about this survey.)

_____

Page Break

Q15 How does ${Q12/ChoiceGroup/SelectedChoices} deliver the NCMP? Select all that apply.

▢ In-house (e.g., Local Authority team collect measurements and send parent's feedback) (1)

▢ Commission a provider organisation (e.g., local school nursing team or child weight management provider) (3)

▢ Other (specify) (4) _____

▢ ⊗I don't know (5)

Page Break

Q16 The items below are some key deliverable elements of the NCMP. Please drag and drop each item to the corresponding group based on who is responsible for the item. (One item can only be in one group)

Local Authority responsibilities NCMP Provider(s) responsibilities Joint responsibilities

_____ Commissioning the NCMP (1) _____ Commissioning the NCMP (1) _____ Commissioning the NCMP (1)

_____ Sending parents pre-measurement letter (2) _____ Sending parents pre-measurement letter (2) _____ Sending parents pre-measurement letter (2)

_____ Collating opt outs from measurement (3) _____ Collating opt outs from measurement (3) _____ Collating opt outs from measurement (3)

_____ Carrying out weighing and measuring (4) _____ Carrying out weighing and measuring (4) _____ Carrying out weighing and measuring (4)

_____ Developing parental results letter (5) _____ Developing parental results letter (5) _____ Developing parental results letter (5)

_____ Disseminating parental results letter (6) _____ Disseminating parental results letter (6) _____ Disseminating parental results letter (6)

_____ Delivering Proactive Follow-up to parents (7) _____ Delivering Proactive Follow-up to parents (7) _____ Delivering Proactive Follow-up to parents (7)

_____ Sending school feedback letters (8) _____ Sending school feedback letters (8) _____ Sending school feedback letters (8)

Page Break

End of Block: Identifying Local Authority and Key people

Start of Block: 1 - Asking about the opt-out and information for public

Q17 How does ${Q12/ChoiceGroup/SelectedChoices} or provider(s) distribute information about the upcoming school heights and weights checks to parents or carers? Please check all that are relevant.

- ▢ Postal services (1)
- ▢ Printed media (2)
- ▢ Public poster boards (3)
- ▢ Website (specify) (4) _____
- ▢ Social media (5)
- ▢ Phone calls (6)
- ▢ Emails (specify) (9) _____
- ▢ SMS (7)
- ▢ Children's school bag (13)
- ▢ Something else (specify) (8) _____
- ▢ ⊗I don't know (12)

Page Break

Q18 Do ${Q12/ChoiceGroup/SelectedChoices} or provider(s) use the "Specimen pre-measurement letter" provided by Public Health England to inform parents or carers and their Reception Year and Year 6 Children about the upcoming NCMP school heights and weights checks? See below.

- o Yes - Specimen (1)
- o Yes - Locally tailored (2)
- o No (3)
- o Never saw the specimen (5)
- o I don't know (6)

Page Break

Display This Question:

If Do ${q://QID13/ChoiceGroup/SelectedChoices} or provider(s) use the "Specimen pre-measurement lett... = Yes - Locally tailored

Q19 Please describe why ${Q12/ChoiceGroup/SelectedChoices} or provider(s) change the NCMP "Specimen pre-measurement letter":

_____

_____

_____

_____

_____

Page Break

Q20 Does ${Q12/ChoiceGroup/SelectedChoices} or provider(s) distribute any additional material alongside information about the upcoming school heights and weights checks?

o Yes (1)

o No (2)

o I don't know (3)

Page Break

Display This Question:

If Do ${q://QID13/ChoiceGroup/SelectedChoices} or provider(s) use the "Specimen pre-measurement lett... = No

Q21 Please describe what ${Q12/ChoiceGroup/SelectedChoices} or provider(s) use instead of the "Specimen pre-measurement letter":

_____

_____

_____

_____

_____

Page Break

Q22 Is there anything else that you would like to tell us regarding the information about the upcoming NCMP school heights and weights checks?

_____

_____

_____

_____

_____

Page Break

End of Block: 1 - Asking about the opt-out and information for public

Start of Block: 2 - Asking about the parent's feedback

Q23 The following set of questions focuses on the parent's feedback, that is the first feedback parents or carers and their Reception Year and Year 6 Children receive after the NCMP school heights and weights checks. Please answer all of the questions for Reception Year and Year 6 Children - you can specify any differences at the end.

Q56 Does ${Q12/ChoiceGroup/SelectedChoices} or provider(s) deliver the NCMP parent's feedback to ANY parents or carers and their Reception Year and Year 6 Children?

o Yes (1)

o No (2)

o I don't know (3)

Skip To: Q34 If Does ${q://QID13/ChoiceGroup/SelectedChoices} or provider(s) deliver the NCMP parent's feedback t... = I don't know

Skip To: Q26 If Does ${q://QID13/ChoiceGroup/SelectedChoices} or provider(s) deliver the NCMP parent's feedback t... = No

Page Break

Q24 How does ${Q12/ChoiceGroup/SelectedChoices} or provider(s) deliver the NCMP parent's feedback to parents or carers and their Reception Year and Year 6 Children? Please check all that are relevant.

- ▢ Postal services (1)
- ▢ Website (specify) (4) _____
- ▢ Phone calls (6)
- ▢ Emails (specify) (7) _____
- ▢ Children's school bag (10)
- ▢ Something else (specify) (8) _____
- ▢ ⊗I don't know (9)

Q27 Please specify the groups of parents or carers and their Reception Year and Year 6 Children that ${Q12/ChoiceGroup/SelectedChoices} or provider(s) target with the parent's feedback. Please check all that are relevant:

- ▢ Underweight Children (1)
- ▢ Healthy weight (2)
- ▢ Overweight Children (3)
- ▢ Very Overweight Children (4)
- ▢ ⊗I don't know (7)

Page Break

Q28 What is the job title(s) of person(s) providing approval (and/or signatory) of the content for the parent's feedback on Reception Year and Year 6 Children? Please select all that are relevant.

- ▢ Director of Public Health (10)
- ▢ Director of Children's Services (11)
- ▢ Head Teacher (12)
- ▢ Primary School Teacher (13)
- ▢ School Governor (14)
- ▢ General Practicioner (15)
- ▢ Local Authority Data Analyst (16)
- ▢ Local Authority NCMP Commissioner (17)
- ▢ Local Authority NCMP Provider (18)
- ▢ NCMP School Nurse Provider (19)
- ▢ Other NCMP Provider (21)
- ▢ School Nursing Role (22)
- ▢ Someone else (specify) (6) _____
- ▢ ⊗No one is responsible (7)
- ▢ ⊗I don't know (8)

Page Break

Q29 What method of contact do ${Q12/ChoiceGroup/SelectedChoices} or provider(s) offer to parents or carers and their Reception Year and Year 6 Children who wish to discuss the parent's feedback results? Please check all that are relevant.

- ▢ Postal services (9)
- ▢ Phone number (1)
- ▢ Social media (2)
- ▢ Email (specify) (3) _____
- ▢ Website (specify) (4) _____
- ▢ Public engagement (5)
- ▢ Other (specify) (6) _____
- ▢ ⊗None (7)
- ▢ ⊗I don't know (8)

Page Break

Q30

Does ${Q12/ChoiceGroup/SelectedChoices} or provider(s) send parents or carers and their Reception Year and Year 6 Children the Public Health England's "Specimen parent's feedback letter" (See below)?

- o Yes - Specimen (1)
- o Yes - Locally tailored (2)
- o No (3)
- o Never saw the specimen (4)
- o I don't know (5)

Page Break

Display This Question:

If Does ${q://QID13/ChoiceGroup/SelectedChoices} or provider(s) send parents or carers and their Rec... = Yes - Locally tailored

Q31 Please describe why ${Q12/ChoiceGroup/SelectedChoices} or provider(s) change the NCMP "Specimen parent's feedback letter":

_____

_____

_____

_____

_____

Page Break

Display This Question:

If Does ${q://QID13/ChoiceGroup/SelectedChoices} or provider(s) send parents or carers and their Rec... = No

Q32 Please describe what you or the provider(s) for ${Q12/ChoiceGroup/SelectedChoices} use instead of the Public Health England's "Specimen parent's feedback letter":

_____

_____

_____

_____

_____

Page Break

Q59 Does ${Q12/ChoiceGroup/SelectedChoices} or provider(s) distribute any additional material alongside the parent's feedback letter?

o Yes (1)

o No (2)

o I don't know (3)

Page Break

Q33

Above, you have answered questions for both the Reception Year and Year 6 Children's feedback. Please indicate and describe any differences between the parent’s feedback for these two groups of children.

_____

_____

_____

_____

_____

Page Break

Display This Question:

If Does ${q://QID13/ChoiceGroup/SelectedChoices} or provider(s) deliver the NCMP parent's feedback t... = No

Or If

If Please specify the groups of parents or carers and their Reception Year and Year 6 Children that... q://QID109/SelectedChoicesCount Is Not Equal to 4

Q26

Similarly to some other Local Authorities, you've answered previously that ${Q12/ChoiceGroup/SelectedChoices} or provider(s) DOES NOT deliver the parent's feedback to ALL parents or carers and their Reception Year and Year 6 Children. Please help us understand why and select all that apply:

- ▢ Cost/funding reasons (1)
- ▢ Staff capacity to implement (4)
- ▢ Not a local priority (5)
- ▢ Prioritise children of highest need e.g. underweight/very overweight (6)
- ▢ Lack of service provision (7)
- ▢ Other (specify) (8) _____
- ▢ ⊗I don't know (9)

Page Break

Q34

Is there anything else that you would you like to tell us about the parent's feedback?

_____

_____

_____

_____

_____

Page Break

End of Block: 2 - Asking about the parent's feedback

Start of Block: 3 - Asking about the proactive follow-up

Q35 The following set of questions focuses on the "proactive follow-up" which could be delivered before or after the parent's feedback is sent to parents or carers and their Reception Year and Year 6 Children. (Proactive follow-up involves contacting the parents or carers to offer them personalised advice and services)

Q36 Does ${Q12/ChoiceGroup/SelectedChoices} or provider(s) deliver "proactive follow-up" to ANY parents or carers and their Reception Year and Year 6 Children?

o Yes (1)

o No (2)

o I don't know (3)

Skip To: Q42 If Does ${q://QID13/ChoiceGroup/SelectedChoices} or provider(s) deliver "proactive follow-up" to ANY... = No

Skip To: Q41 If Does ${q://QID13/ChoiceGroup/SelectedChoices} or provider(s) deliver "proactive follow-up" to ANY... = I don't know

Page Break

Q37 Who delivers the "proactive follow-up" on behalf of ${Q12/ChoiceGroup/SelectedChoices} to parents or carers and their Reception Year and Year 6 Children?

_____

_____

_____

_____

_____

Page Break

Q38

Please specify the groups of parents or carers and their Reception Year and Year 6 Children that receive "proactive follow-up". Please check all that are relevant.

▢ Underweight Children (2)

▢ Healthy weight (3)

▢ Overweight Children (1)

▢ Very Overweight Children (4)

▢ ⊗I don't know (5)

Page Break

Q39 How does ${Q12/ChoiceGroup/SelectedChoices} or provider(s) deliver "proactive follow-up" to parents or carers? Please check all that are relevant.

▢ Postal services (1)

▢ Website (specify) (4) _____

▢ Phone calls (6)

▢ Emails (specify) (7) _____

▢ Something else (specify) (8) _____

▢ ⊗I don't know (9)

Page Break

Q40 What does the team or organisation delivering the "proactive follow-up" in ${Q12/ChoiceGroup/SelectedChoices} offer parents or carers and their Reception Year and Year 6 Children as part of the feedback?

_____

_____

_____

_____

_____

Page Break

Display This Question:

If Does ${q://QID13/ChoiceGroup/SelectedChoices} or provider(s) deliver "proactive follow-up" to ANY... = No

Or If

If Please specify the groups of parents or carers and their Reception Year and Year 6 Children that... q://QID43/SelectedChoicesCount Is Not Equal to 4

Q42

Similarly to some other Local Authorities, you’ve answered previously that ${Q12/ChoiceGroup/SelectedChoices} or provider(s) DOES NOT deliver "proactive follow-up" to ALL parents or carers and their Reception Year and Year 6 Children. Please help us understand why and select all that apply:

- ▢ Cost/funding reasons (1)
- ▢ Staff capacity to implement (4)
- ▢ Not a local priority (5)
- ▢ Lack of service provision (7)
- ▢ Other (specify) (8) _____
- ▢ ⊗I don't know (9)

Page Break

Q41

Is there anything else that you would you like to tell us about the NCMP "proactive follow-up"?

_____

_____

_____

_____

_____

Page Break

End of Block: 3 - Asking about the proactive follow-up

Start of Block: 4 - Asking about services available in the area of LA

Q43 Are there any services (as part of the local healthy weight care-pathways; including universal, Tier 1, 2, and 3 services related to healthy weight; physical activity; food and nutrition) available in ${Q12/ChoiceGroup/SelectedChoices} for parents or carers and their Reception Year and Year 6 Children?

o Yes (1)

o No (2)

o I don't know (3)

Skip To: Q45 If Are there any services (as part of the local healthy weight care-pathways; including universal, T... = No

Skip To: End of Block If Are there any services (as part of the local healthy weight care-pathways; including universal, T... = I don't know

Page Break

Q44

Please specify the groups of parents or carers and their Reception Year and Year 6 Children who are offered services (as part of the local healthy weight care-pathways; including universal, Tier 1, 2, and 3 services related to healthy weight; physical activity; food and nutrition) in ${Q12/ChoiceGroup/SelectedChoices} (Please check all that are relevant):

▢ Underweight Children (2)

▢ Healthy weight (3)

▢ Overweight Children (1)

▢ Very Overweight Children (4)

▢ ⊗I don't know (5)

Page Break

Display This Question:

If Are there any services (as part of the local healthy weight care-pathways; including universal, T... = No

Or If

If Please specify the groups of parents or carers and their Reception Year and Year 6 Children who are offered services (as part of the local healthy weight care-pathways; including uni... q://QID280/SelectedChoicesCount Is Not Equal to 4

Q45

Similarly to some other Local Authorities, you've answered previously that there are no services available in ${Q12/ChoiceGroup/SelectedChoices} or that they are limited only to some parents or carers and their Reception Year and Year 6 Children. Please help us understand why and select all that apply:

▢ Cost/funding reasons (1)

▢ Staff capacity to implement (4)

▢ Lack of service provision (5)

▢ Not a local priority (6)

▢ Other (specify) (7) _____

▢ ⊗I don't know (8)

Page Break

Q58

Is there anything else that you would you like to tell us about any services (as part of the local healthy weight care-pathways; including universal, Tier 1, 2, and 3 services related to healthy weight; physical activity; food and nutrition) available in ${Q12/ChoiceGroup/SelectedChoices}?

_____

_____

_____

_____

_____

Page Break

End of Block: 4 - Asking about services available in the area of LA

Start of Block: Collecting supplementary data and demographics

Q46 We are collating the documents that all 152 Local Authorities in England are using as part of the NCMP. This includes the: Pre-measurement letter, leaflet, etc. used to provide information about the NCMP school heights and weights checks to parents or carers and their Reception Year and Year 6 Children; Parent's feedback used to inform parents or carers and their Reception Year and Year 6 Children about the NCMP measurement results; Proactive feedback used to follow-up with parents or carers and their Reception Year and Year 6 Children; Additional documents that you attach alongside the NCMP pre-measurement, parent's feedback and proactive follow-up Healthy weight care-pathways spreadsheet or service summaries for all children in the Reception Year and Year 6.

Please send us what you are using. If you answer "Yes - Send them right now", you will be asked to send them in the next question.

o Yes - Send them right now (1)

o Yes - Contact me on my email later (2)

o No - Not authorised to send this (3)

o No - Other reason (4)

o No - Can describe what we use (5)

Skip To: Q51 If We are collating the documents that all 152 Local Authorities in England are using as part of the... = No - Not authorised to send this

Skip To: Q51 If We are collating the documents that all 152 Local Authorities in England are using as part of the... = No - Other reason

Skip To: Q50 If We are collating the documents that all 152 Local Authorities in England are using as part of the... = No - Can describe what we use

Skip To: Q52 If We are collating the documents that all 152 Local Authorities in England are using as part of the... = Yes - Contact me on my email later

Page Break

Q47 The form below allows you to upload all of your NCMP files. Please select all of the files you wish to upload. We specifically ask you to attach: Pre-measurement letter, leaflet, etc.; Parent's feedback; Proactive feedback; Additional documents that you attach alongside those. After you have selected all the files, click on "Add files". In the case of larger files, a status bar will appear. Please wait until the bar disappears. Files exceeding 25 MB cannot be uploaded. Files that have been added will be added below. When you have added all the files, please click "Submit". Please do not click the "Submit" button more than once. After you click "Submit", there will be confirmation that the documents have uploaded. Should there be any issues, we will contact you via the email address you have provided.

Q48 Upload your NCMP files:

Page Break

Q49 I confirm that I have uploaded the following documents. (Select all that apply)

▢ Pre-measurement letter, leaflet, etc. (1)

▢ Parent's feedback (2)

▢ Proactive feedback (3)

▢ Additional documents (attached alongside Pre-measurement letter, Parent's feedback, Proactive feedback) (4)

▢ Healthy weight care-pathways spreadsheet or service summaries (5)

Page Break

Display This Question:

If We are collating the documents that all 152 Local Authorities in England are using as part of the... = No - Can describe what we use

Q50 Please describe what you use and why it isn't possible to send it:

_____

_____

_____

_____

_____

Page Break

Display This Question:

If We are collating the documents that all 152 Local Authorities in England are using as part of the... != Yes - Send them right now

Q51 Who should be contacted regarding this survey, information about the NCMP in ${Q12/ChoiceGroup/SelectedChoices} or access to the NCMP documents?

o Name (1) _____

o Position (2) _____

o Email (3) _____

Page Break

Q52 Did you understand all of the questions in the survey?

o Yes (1)

o No (2)

Skip To: End of Block If Did you understand all of the questions in the survey? = Yes

Page Break

Q53 Which questions were not clear and why?

_____

_____

_____

_____

_____

Q54 Would you like to schedule a phone call instead? If so, please provide your phone number below:

_____

Page Break

End of Block: Collecting supplementary data and demographics

Start of Block: Debrief

Q55 National Survey to explore NCMP practice across Local Authorities in England

2.2.2.4 Debrief

You have just participated and completed a national survey exploring current National Child Measurement Programme (NCMP) in one of the Local Authorities in England. As part of the survey, you have answered questions about the NCMP for the local government authority area that you decided to represent. This survey was hosted on QualtricsTM . You were asked to upload several documents related to the NCMP in the Local Authority and provide additional sociodemographic information about you and the Local Authority. There was no hidden condition or manipulation.

The survey participation should not pose any serious risks or cause any harm. However, you could have experienced something that has decreased your comfort. If this is the case, please contact either the Principal Investigator or the Director of Studies using the details below.

If you have any questions about your participation or the findings of this study, please do not hesitate to contact the Principal Investigator – Martin Čadek (at M.Cadek@leedsbeckett.ac.uk or Number) or Director of Studies – Dr Stuart W. Flint (at S.W.Flint@leedsbeckett.ac.uk or Number). We are happy to receive any questions about the study or provide further information where necessary.

You are now in a raffle to win a place (free attendance) at the 6th Annual Weight Stigma Conference (18th - 19th June 2018) or one of two £100 Amazon vouchers. The winners will be contacted in May 2018.

We would like to take this opportunity to thank you again for your participation.

End of Block: Debrief

2.2.3 Freedom of Information Request for the NCMP Documents

«GreetingLine»

I am writing to you under the Freedom of Information Act 2000 to request the following information from «Company» about the National Child Measurement Programme (NCMP):

- Pre-measurement letter, leaflet, or any other medium used to provide information about the NCMP school heights and weights checks to parents or carers and their Reception Year and Year 6 Children;
- Parent's feedback, or parent's results letter used to inform parents or carers and their Reception Year and Year 6 Children about the NCMP measurement results;
- Proactive feedback used to follow-up with parents or carers and their Reception Year and Year 6 Children;
- Additional documents that you attach alongside the NCMP pre-measurement, parent's feedback and proactive feedback
- Healthy weight care-pathways spreadsheet or service summaries for all children in the Reception Year and Year 6.

Please can you provide the information in the form of electronic documents attached to my email address: M.Cadek@leedsbeckett.ac.uk.

If you have any queries, please don't hesitate to contact me via +44 (0)771 520 8734 or M.Cadek@leedsbeckett.ac.uk

Thank you very much for your help and time.

Kind regards,

Martin Čadek, PhD Student School of Sport

Leeds Beckett University, G06 Churchwood Building,

Headingley, Leeds, LS6 3QS, United Kingdom

2.2.4 Email to Directors of Public Health

Subject: Please share important survey about the NCMP from Leeds Beckett University

«GreetingLine»

My name is Martin Čadek and I am a PhD student at Leeds Beckett University. I am conducting a national survey with support from the NCMP team at Public Health England. The survey is an important national project aiming to explore the process and delivery of the NCMP across the 152 LAs in England. The results will contribute to the improvement of parental letters and gather useful local NCMP information.

As of today, almost 60% of LAs participated; however, more responses are needed to obtain a representative sample of England. I am writing you a personal letter to request your support with this survey by sharing it with your most appropriate colleagues. I am looking for people in «Company» who have: a good understanding of the operational delivery of the NCMP at local authority level; access to the NCMP letters such as parent's feedback; and any other information parents or carers receive relating to the NCMP (e.g. leaflets, posters).

Those who complete the survey will automatically enter a prize draw to win free attendance at either the 6th Annual Weight Stigma Conference (18th - 19th June 2018) or one of two £100 vouchers for a well-known online retailer.

The survey is designed to be user friendly and should take around 15 minutes. All information you provide is stored privately and securely, and all results will be anonymised prior to publication. The survey can be accessed using the link below: https://leedsbeckettsport.eu.qualtrics.com/jfe/form/SV_d4LvZqL3TzUo6wJ

The survey will close on 4th of May 2018.

Thank you for your time and help. If you have any questions about the survey or your participation, please contact me using the details below.

Kind regards,

Martin Čadek

Leeds Beckett University

Tel: +44 (0)771 520 8734

Email: M.Cadek@leedsbeckett.ac.uk

2.2.5 Email to Public Health England's Centres

Dear NCMP centre lead,

We are supporting Leeds Beckett University on important NCMP research. We are asking NCMP centre leads to share this email to LAs (Local Authorities) to encourage them to be part of this research, by completing a survey, and we would be very grateful if you could disseminate the information below.

The survey will close on 31st of March 2018. Reminder emails will be sent out if any of your areas miss the opportunity to participate the first-time round.

Please see more details below from Martin Čadek, the lead researcher at Leeds Beckett University. If LAs do have any questions, please kindly ask them to contact Martin directly.

Best wishes

Lisa

My name is Martin Čadek and I am a PhD student at Leeds Beckett University. I am conducting a national survey with support from the NCMP team at Public Health England to explore the process and delivery of the NCMP across the 152 LAs in England.

I am looking for people who have: a good understanding of the operational delivery of the NCMP in at local authority level; access to the NCMP letters such as parent's feedback; and any other information parents or carers receive relating to the NCMP (e.g., leaflets, posters). Anyone who wishes to take part in the survey will be asked to answer questions related to NCMP activities such as informing parents about the measurement day and delivering the parent's feedback. Participants will be asked to upload the most recent version of parent's feedback letter, and other relevant documents. Those who complete the survey, will automatically enter a prize draw to win free attendance at either the the 6th Annual Weight Stigma Conference (18th - 19th June 2018) or one of two £100 Amazon vouchers.

I would be delighted if you or someone you recommend could participate in the survey. The survey is hosted securely at QualtricsTM and takes 15 minutes to complete. The survey can be accessed using the link below: https://leedsbeckettsport.eu.qualtrics.com/jfe/form/SV_d4LvZqL3TzUo6wJ

The survey will close on 31st of March 2018.

Thank you for your time and help. If you have any questions about the study or your participation, please contact me using the details below.

Kind regards,

Martin Čadek

Leeds Beckett University

Tel: +44 (0)771 520 8734

Email: M.Cadek@leedsbeckett.ac.uk

2.2.6 Miro Website Screenshot

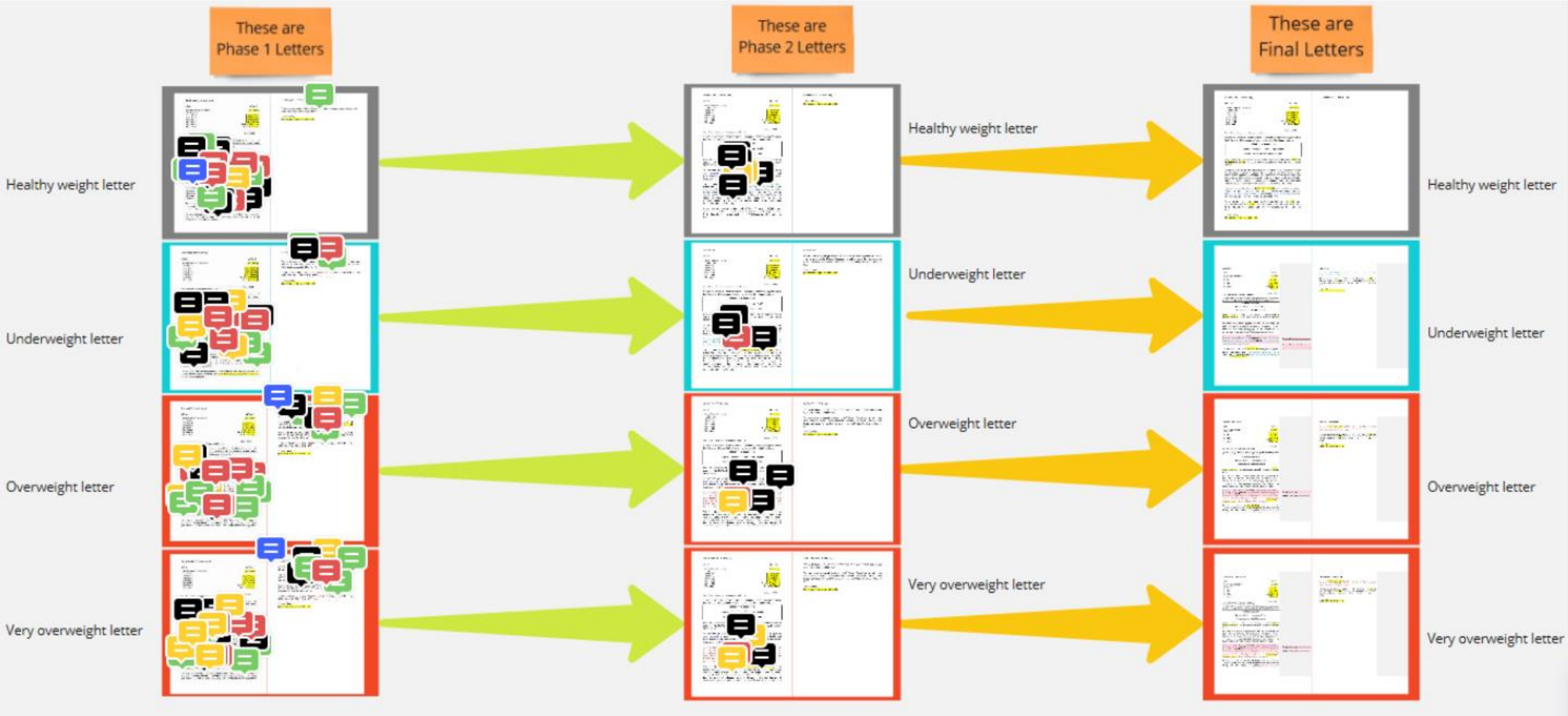


Figure 1: Miro Platform for Collaborative Feedback on the Letters

2.3 Discussing Design Challenges

The following appendix provides further details about the challenges encountered during the implementation of Study 2. Specifically, designs 1 and 2 are discussed here, while the final design three was presented in the main text.

2.3.1 Design 1 – Cluster randomised control sampling approach

The original design planned to utilise cluster randomised control trial (CRCT) and was inspired by two study registrations aimed to change and test the NCMP result letters (Sallis, 2014a; Sallis, 2014b). These registrations were later also published, and the published article was discussed in the literature review section (Sallis et al., 2019).

In the current project, schools were defined as clusters to which either control (the standard results letter) or experimental (the modified result letter) version of the letter were randomly allocated. The random allocation process was scheduled in Suffolk CC, where the letters would be randomised across 246 primary schools (clusters) with a total estimate (based on the previous year) of 14892 parent and child pairs who were either in Reception year (4 – 5 years old) or in Year 6 (10 – 11 years old) of education (Public Health England, 2019). The letters did not plan to differentiate between Year 6 and Reception year, and the randomisation was planned to occur at the school level, with any given cluster being equally likely to receive either version of the result letter. Figure 2 below depicts this process.

Figure 2: Proposed Sampling (1) of All Schools in Suffolk CC

All measures were to be available via an online survey hosted on Qualtrics™. The survey was to be accessible using a link and QR code attached at the end of all letters. Considerable attrition was expected using evidence from previous research (Falconer et al., 2014; Falconer et al., 2012). The estimated response rate was expected to be up to 20%; thus, the expected sample size at this response rate was 2979 for both Reception year and Year 6 children's parents given the absolute population size. The survey aimed to collect recipients' experience and allow them to participate in additional research to discuss details of their participation in the NCMP in Suffolk CC by letting them provide further contact details. Within the Qualtrics™, all letters had their survey version to compare the recipient's engagement and ensure it was clear which version was reviewed.

The only way to measure the service uptake was to collaborate with all services providing lifestyle advice in Suffolk. In this case, that was OneLife Suffolk, who was the exclusive provider. At the time, it was expected that the service provider and Suffolk CC would be able to provide minimalistic pairing of service user data with the letter they have received in the context of GDPR and data privacy. After an initial discussion with supervisors and ethical clearance, it was concluded that the team in Suffolk was not to inform parents that there are "experimental" or "control" versions of the letters as it would potentially jeopardize the trial.

While collaborating with Suffolk CC, it was planned to contact schools and offer them the option to participate in the e-letter trial. Interested schools would be excluded from the print letter trial and randomisation process and part of a smaller feasibility study. The remaining schools in Suffolk would be randomly allocated to either version of the letter.

To facilitate the distribution according to the trial process, a spreadsheet where every school had their version of the letter allocated was developed and sent to the NCMP team at Suffolk, who were asked to use it to send the letters accordingly.

The proposed CRCT design required timely delivery of collaboratively developed letters. Thus, the letters were delivered to Suffolk CC on the 17th of August 2018. Initially, it was also planned that these four letters, along with the PHE[1] template letter, would be issued with their electronic counterparts. The e-letters would be the same and provide the same content as print letters but would be used to test whether the delivery method impacted responses and uptake to services.

2.3.1.1 Design 1 – Practical challenges

The CTCT design can be considered the most suitable design from the researcher's perspective. However, such designs are not easily implemented. They often face difficulties at the implementation stage, recruitment stage and require an extensive collaboration of all participating stakeholders (Falconer et al., 2014; Sallis et al., 2016; Sallis et al., 2019). Similarly, this design ran into multiple practical challenges, discussed below.

The first change that occurred in September 2019 was that the long-term sick leave of the CYP (Children and Young People) lead, who was responsible for the practical side of the NCMP letter distribution for Suffolk CC. In addition, the NCMP administrator was also on leave by the end of the month. These circumstances resulted in a decision by Suffolk CC Health Improvement Commissioner to put the letters I had developed on hold. This decision was at the time primarily due to two reasons – first, the lead at the time had already begun to work on separating the letters between schools; second, the team capacity of personnel responsible for the NCMP delivery was significantly reduced and asking them to engage in the trial would have put them under additional pressure. Nevertheless, both the lead and administrator maintained essential roles in the process of the NCMP delivery, especially in the situation when the letters were to be part of a trial.

However, there was also a political reason to put the letters on hold with far more significant implications for the trial. The NCMP at Suffolk was part of a tender for services managing children aged 0 to 19 years. The result was to be released in October 2018, but it was expected

[1] Public Health England was replaced by UK Health Security Agency and Office for Health Improvement and Disparities on 1st October 2021

that the new provider would be under further pressure during the transition period in April 2019.

In practice, these challenges were outside my control, and I had to wait for the critical decisions to be made. During this period, I attempted to offer support for the NCMP team at Suffolk; however, there was not much that I could do until it was inevitable when the CYP lead returned. My supervisors tried to negotiate with the Suffolk Health Improvement Commissioner an option for me to be at the local authority and help with any tasks regarding the delivery of letters; however, due to data protection policies in place, this was not an option possible at the time. I also visited Suffolk at the end of September 2018 to discuss details of the upcoming challenges and what would be the best course of action.

At the meeting in Suffolk on the 27th of September 2018, my supervisor and I discussed the upcoming challenges with the Health Improvement Commissioner at Suffolk. Reflecting on the process, I perceived the debate as a reality check of the study design that was mainly based on the evidence from academic journals and past studies. From the commissioner's perspective, it was simply not feasible to conduct the study following the proposed design. The NCMP team at the time had been under pressure due to the absence of the CYP lead and the NCMP administrator and was also affected by the pending result of the politically sensitive tender situation. On reflection, it was understandable that the Health Improvement Commissioner felt that the personnel who were temporarily covering for the staff on leave would not be able to carry the trial. Regrettably, the pace of these challenges made it equally difficult for me to offer suitable alternatives on the ground.

Nonetheless, during this crucial meeting, we discussed and agreed to scale down the trial to a selected number of schools and minimise the research onus on the LGA team while allowing key methodological elements such as randomisation to occur. We developed a solution that would later evolve into the second design discussed in the section below during the discussion. In the following days, we agreed through a series of emails that I would develop a list of a smaller number of schools that could be used as part of a stratified random sampling approach, and I provided the new design to the Health Improvement Commissioner 16th of October 2018.

2.3.2 Design 2 – Proportionate stratified sampling approach

On the 16th of October, I sent Suffolk CC a list of schools alongside a proposal for the new design to accommodate some of the practical limitations discussed in the section above. The second design was restricted by the Health Improvement Commissioner to a sample maximum of 30 schools per condition (control, experimental) from a total of all schools in Suffolk CC. To achieve this goal, I proposed a sampling method where the total population of schools in Suffolk was allocated into six mutually exclusive strata, and schools/clusters were proportionally sampled to either control or experimental groups. Therefore, the sampling method was proportionate stratified sampling - with the trial still utilising cluster randomised

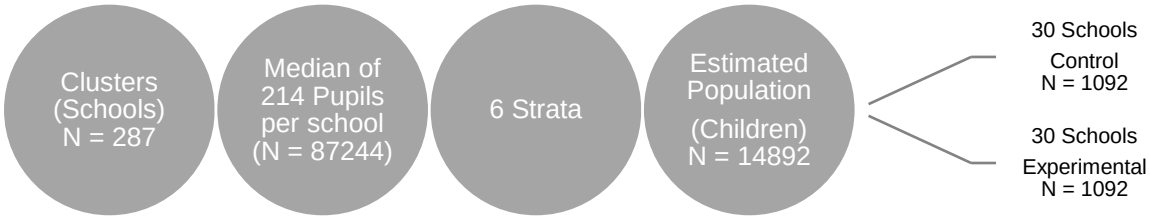


Figure 3: Proposed Sampling (2) of Selected Schools in Suffolk CC

control as each school (cluster) had a chance weighted by the proportionated size of their cluster to be included either in the control or experimental group. Figure 3 illustrates the process.

Suffolk CC did not supply a list of schools in their local authority; therefore, publicly available data had to be used – I merged several databases to achieve the best detail possible (Department for Education, 2020). As a precautionary step, I included all potentially NCMP eligible schools in Suffolk with the required statutory age of pupils between 4 – 11 years. This resulted in a population of 287 schools that had children potentially eligible for the NCMP. This was based purely on open accessed government data and statutory age recorded in the dataset. The estimated median number of pupils of this sample was 214 pupils per school, and the estimated total sample of all pupils in the database was 87,244 for all 287 schools. Provided that the NCMP population was estimated at 14,892 (based on the last year 2017/2018) and the total estimate of pupils from the population of eligible schools was 87244, each school was expected to contain approximately 17% of children eligible for the NCMP. Applying this logic, I expected approximately 1,092 children/parent pairs to be included in the

30 schools sampled per condition and an estimated 219 children/parent pairs when the expected response rate of 20% was applied.

The strata were created based on data available at the Lower Super Output Areas (LSOA) level, and the assumption was that LSOA correlates with individual characteristics of people living in the given LSOA. Additionally, I assumed that people did not commute extensively to schools beyond their LSOA.

The data gathered on the LSOA level contained information on Index of Multiple Deprivation score (IMD; compared to the national average), School Size (Statutory N of Pupils), School Location (Longitude, Latitude), Number of Schools per LSOA, Urban Density (Measured on LSOA Level and treated as categorical variable transformed to Urban and Non-Urban), and distance (in meters) of the school from its nearest service. These characteristics were used to develop the strata.

To account for all different characteristics, the procedure to create the strata used hierarchical clustering and was based on Gower's distance (Gower, 1971). The optimal number of strata was six according to the majority rule. The scripts were prepared in R version 4.0.3 and R Studio 1.4.1103. The procedure ensured that all the information in the paragraph above was represented in the strata; thus, the population sample collected was representative. The clusters were not further described at the time; however, the population of schools in Suffolk CC was separated as represented in Table 1 below (the proportion column was calculated based on a maximum of 30 schools in the experimental condition).

Table 1: Proposed Number of Strata in Suffolk CC

Clusters[2]	**Schools**	**Proportion to sample**
Cluster 1	134	13.9583333
Cluster 2	14	1.4583333
Cluster 3	53	5.5208333
Cluster 4	29	3.0208333
Cluster 5	54	5.6250000
Cluster 6	4	0.4166667

The proportions were then used to conduct the stratified sampling using a script written in R to sample schools into control and experimental conditions. These were then saved as a comma-separated file and sent to the representatives at Suffolk CC. In practice, the control sample did not need to be sampled – except for the schools in the experimental condition, the rest of the schools were to receive the standard letter where only a link to the survey was attached. However, for methodological purposes, both conditions were sampled.

[2] The total number (N = 288) indicates that one school had the same "establishment name" in the database.

The intention was that this design would compromise the first design and not randomising schools at all. However, there were several practical challenges for implementing the second design as with the previous design.

2.3.2.1 Design 2 – Practical challenges

The first challenge was a lack of data access and the absence of a suitable platform for communication between the research team at Leeds Beckett University, OneLife Suffolk staff, and Suffolk CC staff.

As a researcher, I had no access or option to access, at the time, data that would allow me to prepare the sampling methodology in detail. As described in the paragraphs above, I had to rely on open government data. The approach taken was to be cautious and follow the characteristics of the data set publicly available and maximise the eligible population. However, I have missed features that would have been easily noticed by the Health Improvement Commissioner or other NCMP staff at Suffolk CC – because there were no appropriate procedures regarding communication and data sharing in place. The result was that the experimental list of schools suggested for the trial that I have delivered to Suffolk CC contained secondary schools. Only when the list was delivered and reviewed was I informed by the Health Improvement Commissioner that secondary schools in local authorities are not part of the NCMP as generally the pupils are too old – despite the statutory age of these schools covering the NCMP range. The Health Improvement Commissioner clarified that the secondary schools were usually looked up as “feeder” schools for potential options for follow-up of the result letter (i.e., if pupil transfers schools, Suffolk CC looks for the pupil in the new school). However, the secondary schools were not the place of the NCMP measurements.

This issue could have been resolved relatively quickly, though as I could replicate the procedure only on primary schools in Suffolk. But, unfortunately, this is where the second challenge came – again, related to the lack of a communication platform between Suffolk CC and Leeds Beckett University.

The alternative approach of the second design was discussed between the Health Improvement Commissioner and me. Subsequently, the Health Improvement Commissioner had to also meet and discuss the design with the CYP staff who were not at the meeting at the time; therefore, they could not have provided valuable insight on the feasibility of the approach. The Health Improvement Commissioner sent me the email after meeting with the CYP on 8/11/2019, attached in Appendix 2.1. The email provides the rationale for the decision to leave the second design, which was the staff capacity and complexity of the system to generate the letters. The result was that any proposed design would need to be built into the system to an extent where it allowed a possibility to separate letters internally.

When reflecting on that option, it would require me to access and be at the local authority to prepare such a system or optimise the current system. The problem, as referenced previously, was that I could not assist with such a task due to data protection restrictions. However, it would certainly be possible as I was aware from communication with the PHE; the system allows every school to have their data exported separately. I have also investigated the system's basic functionality using the documentation at the NHS Digital website, specifically the user guide on Generating Feedback letters (NHS Digital, 2019). It was possible to preview a dummy version of the system; however, without the access, I could not provide any further assistance.

Furthermore, at the time, the CYP at Suffolk CC was not mandated to complete feedback of the NCMP result letters and was not financially contracted to do so or engage in the trial at all. This naturally meant that any involvement in the research project I proposed was up to their voluntary participation. This was not practical as it meant additional work for the CYP on the NCMP at Suffolk CC.

Finally, when I have received the information in the emails, the letters were already due to be sent out (9th of November 2018) and be delivered by the end of December. This meant that there was nothing to be done at that stage and the decision to abandon the trial had been finalized; however, the letters that went out did include the survey links as discussed.

After further discussions with the Health Improvement Commissioner, I was aware that different NCMP letters could only be sent on the level of year groups of pupils. In other words, one version of letters could be sent to Year 6 and another version to Reception year children. This effectively meant that no randomisation was possible, but it was not apparent until the CYP declined to participate due to the reasons stated above.

At the time, the only remaining practical research opportunity at Suffolk CC seemed to be a quasi-experimental approach as it was not possible to look at the letters in the upcoming year as well, given the timeline of the project. These considerations led to the development of the third design, which was discussed in the thesis under the chapter related to Study 2.

2.4 Study 2 – Materials

2.4.1 DELPHI Study Sample

Study 1 and 2 were connected with a DELPHI process with nine stakeholders. These stakeholders were two parents, one representative of the NCMP team at PHE, one Health Improvement Commissioner at Suffolk CC, three academics working in public health, communication, and weight stigma studies, one representative of OneLife Suffolk (service provider), and one school nurse lead at Suffolk CC. The aim was not to achieve a specific sample size but rather to ensure that all essential perspectives were represented in the process of letter evaluation. This was achieved by representing various stakeholder roles – as written above.

2.4.2 The Feedback Letters

The following feedback letters were developed in the collaborative process described in methods and finalised with representatives of Lewisham and Suffolk LAs to fit their needs. The Suffolk attachment is the standard C4L leaflet.

2.4.2.1 Suffolk Attachment

Figure 4: Suffolk C4L Attachment

2.4.2.2 Suffolk Underweight Letter (Control)

Private and confidential
Parent / Carer of Anna Barlow
20 Pasture View
Clifton
York
North Yorkshire
England
YO1 8EW

[redacted]
School Nurse Team Lead
Health, Wellbeing and Children's Services
Suffolk County Council
Gainsborough Clinic
Clapgate Lane, Ipswich, Suffolk.
IP3 0RL
Tel: 01473 264644

27 April 2021

NHS number: 4983198431

Dear Parent / Carer of Anna Barlow,

We recently sent you a letter about measuring Anna's height and weight in school as part of the National Child Measurement Programme. The measurements have now been taken and the results are below.

Seeing if your child's weight is within the healthy range for their age, sex and height can help you make informed choices about their lifestyle.

Anna's results	
Height (cm)	98.1
Weight (kg)	13.2
Date of measurement	16 August 2013

These results suggest that your child is underweight for their age, sex and height.

Most underweight children are perfectly healthy, but some can develop health problems. Please contact your GP for further advice.

You can find out how Anna's result was calculated and check how Anna is growing over time, please visit www.nhs.uk/bmi.

This information has not been shared with Anna or school staff. Locally, this information is held by Suffolk County Council's Children and Young People's team and is treated confidentially.

Thank you for reading this letter - we hope this information is useful to you. Please call and take advantage of the free support we offer.

Suffolk County Council welcomes your feedback. Please type ncmp.me/1s into your web browser to access our survey, and the chance to win one of four £25 vouchers.

Yours sincerely,

[redacted] - School Nurse Team Lead

Some medical conditions or treatment that your child is receiving may mean that BMI centile is not the best way to measure your child. Your GP or other health professional caring for your child will be able to discuss this with you.
http://www.suffolk.gov.uk/CYPprivacynotice

Figure 5: Suffolk UW Control

2.4.2.3 Suffolk Underweight Letter (Experimental)

Private and Confidential
Parent/Carer of «FirstName» «LastName»
«Address1»
«Address2»
«Address3»
«Address4»
«Address5»
«Postcode»

[redacted]
School Nurse Team Lead
Health, Wellbeing and Children's Services
Suffolk County Council
Gainsborough Clinic
Clapgate Lane, Ipswich, IP3 0RL

Tel: 01473 264644

27 April 2021

NHS number: «NHSNumber»

Dear Parent/Carer of «FirstName» «LastName»,

We recently wrote to you about measuring «FirstName»'s height and weight as part of the National Child Measurement Programme. Here are «FirstName»'s results:

«FirstName» «LastName»	
Height (cm) «Height»	**Weight (kg) «Weight»**
Date of measurement «DateOfMeasurement»	

These results suggest that «FirstName»'s weight is below the expected level for their age.

Your school nurse may get in touch with you so that you can discuss your child's health and these measurements. They will be very happy to help by answering any questions you may have and may put you in touch with a GP for further support. You can get in touch with us on 01473 275234.

If you would like to find out more about how your child's result compares with other children's result, you can go to www.nhs.uk/BMI, and NHS.uk/C4L1. These websites allow you to check your expected child's weight for their height and age group. Please keep in mind that, as a child is still growing, they cannot be compared with adults.

The information on your child's weight is looked after by your Suffolk County Council's Children and Young People's team and is treated confidentially. We have sent you these results so that you have the best information to allow you to look after your child's health.

We recommend that you get in touch with your school nurse as they will be able offer you additional support and more information that will make it easier to discuss this with «FirstName». We offer this support because research shows that children can experience social difficulties because of their weight.

Suffolk County Council welcomes your opinion about this NCMP letter. Please type ncmp.me/1b into your web browser to access our survey, and the chance to win one of four £25 vouchers. Thank you for reading this letter.

Yours sincerely,
[redacted] School Nurse Team Lead

Some medical conditions or treatment that your child is receiving may mean that BMI centile is not the best way to measure your child. Your GP or other health professional caring for your child will be able to discuss this with you
http://www.suffolk.gov.uk/CYPprivacynotice

Figure 6: Suffolk UW Experimental

2.4.2.4 Suffolk Healthy Weight Letter (Control)

Private and confidential
Parent / Carer of Ian Dalby
16 Highbury Avenue
Earswick
York
North Yorkshire

YO32 9OY

[redacted]
School Nurse Team Lead
Health, Wellbeing and Children's Services
Suffolk County Council
Gainsborough Clinic
Clapgate Lane, Ipswich, Suffolk.
IP3 0RL
Tel: 01473 264644

27 April 2021

NHS number: 4983198432

Dear Parent / Carer of Ian Dalby,

We recently sent you a letter about measuring Ian's height and weight in school as part of the National Child Measurement Programme. The measurements have now been taken and the results are below.

Seeing if your child's weight is within the healthy range for their age, sex and height can help you make informed choices about their lifestyle.

Ian's results	
Height (cm)	120
Weight (kg)	25
Date of measurement	16 August 2013

These results suggest that your child is a healthy weight for their age, sex and height.

To help your child remain healthy, you can:

- Go online for practical advice at: www.nhs.uk/change4life and www.nhs.uk/ncmp2

You can find out how Ian's result was calculated and check how Ian is growing over time, please visit www.nhs.uk/bmi.

This information has not been shared with Ian or school staff. Locally, this information is held by Suffolk County Council's Children and Young People's team and is treated confidentially.

Thank you for reading this letter - we hope this information is useful to you. Please call and take advantage of the free support we offer..

Suffolk County Council welcomes your feedback. Please type ncmp.me/2s into your web browser to access our survey, and the chance to win one of four £25 vouchers

Yours sincerely,

[redacted] School Nurse Team Lead

Some medical conditions or treatment that your child is receiving may mean that BMI centile is not the best way to measure your child. Your GP or other health professional caring for your child will be able to discuss this with you.
http://www.suffolk.gov.uk/CYPprivacynotice

Figure 7: Suffolk HW Control

2.4.2.5 Suffolk Healthy Weight Letter (Experimental)

change 4 life
Eat well Move more Live longer

Suffolk County Council

Private and Confidential
Parent/Carer of «FirstName» «LastName»
«Address1»
«Address2»
«Address3»
«Address4»
«Address5»
«Postcode»

[redacted]
School Nurse Team Lead
Health, Wellbeing and Children's Services
Suffolk County Council
Gainsborough Clinic
Clapgate Lane, Ipswich, IP3 0RL

Tel: 01473 264644

27 April 2021

NHS number: «NHSNumber»

Dear Parent/Carer of «FirstName» «LastName»,

We recently wrote to you about measuring «FirstName»'s height and weight as part of the National Child Measurement Programme. Here are «FirstName»'s results:

«FirstName» «LastName»
Height (cm) «Height» Weight (kg) «Weight»
Date of measurement «DateOfMeasurement»

These results suggest that «FirstName»'s weight is at the expected level for their age.

If you would like to talk about these results please get in touch with us on 01473 275234. We will be very happy to help by answering any questions you may have.

If you would like to find out more about how your child's weight compares with other children's weight, you can go to www.nhs.uk/BMI, and NHS.uk/C4L2. These websites allow you to check your expected child's weight for their height and age group. Please keep in mind that, as a child is still growing, they cannot be compared with adults.

The information on your child's weight is looked after by your Suffolk County Council's Children and Young People's team and is treated confidentially. We have sent you these results so that you have the best information to allow you to look after your child's health. You do not have to discuss these results with «FirstName» if you do not wish to.

Suffolk County Council welcomes your opinion about this NCMP letter. Please type ncmp.me/2b into your web browser to access our survey, and the chance to win one of four £25 vouchers. Thank you for reading this letter.

Yours sincerely,

[redacted]
School Nurse Team Lead

Some medical conditions or treatment that your child is receiving may mean that BMI centile is not the best way to measure your child. Your GP or other health professional caring for your child will be able to discuss this with you
http://www.suffolk.gov.uk/CYPprivacynotice

Figure 8: Suffolk HW Experimental

2.4.2.6 Suffolk Overweight Letter (Control)

Private and confidential
Parent / Carer of Noel Smith
7 Elm Close
Holgate
York
North Yorkshire
England
YO16 8EW

[redacted]
School Nurse Team Lead
Health, Wellbeing and Children's Services
Suffolk County Council
Gainsborough Clinic
Clapgate Lane, Ipswich, Suffolk.
IP3 0RL
Tel: 01473 264644

27 April 2021

NHS number: 4983198433

Dear Parent / Carer of Noel Smith,

We recently sent you a letter about measuring Noel's height and weight in school as part of the National Child Measurement Programme. The measurements have now been taken and the results are below.

Seeing if your child's weight is within the healthy range for their age, sex and height can help you make informed choices about their lifestyle.

Noel's results	
Height (cm)	120.7
Weight (kg)	30.25
Date of measurement	16 August 2013

These results suggest that your child is overweight for their age, sex and height.

If your child is overweight now they are more likely to grow up to be overweight as an adult. This can lead to health problems. You and your child can make simple changes to be more active and eat more healthily. As a first step, please call One Life Suffolk on 01473 718193 to find out how you can benefit from free local support. You can also:

- Go online for practical advice at: www.nhs.uk/change4life and www.nhs.uk/ncmp3

You can find out how Noel's result was calculated and check how Noel is growing over time, please visit www.nhs.uk/bmi.

This information has not been shared with Noel or school staff. Locally, this information is held by Suffolk County Council's Children and Young People's team and is treated confidentially.

Thank you for reading this letter - we hope this information is useful to you. Please call and take advantage of the free support we offer. Suffolk County Council welcomes your feedback. Please type ncmp.me/3s into your web browser to access our survey, and the chance to win one of four £25 vouchers.

Yours sincerely,

[redacted] School Nurse Team Lead

Some medical conditions or treatment that your child is receiving may mean that BMI centile is not the best way to measure your child. Your GP or other health professional caring for your child will be able to discuss this with you.
http://www.suffolk.gov.uk/CYPprivacynotice

Figure 9: Suffolk OW Control

2.4.2.7 Suffolk Overweight Letter (Experimental)

Private and Confidential
Parent/Carer of «FirstName» «LastName»
«Address1»
«Address2»
«Address3»
«Address4»
«Address5»
«Postcode»

[redacted]
School Nurse Team Lead
Health, Wellbeing and Children's Services
Suffolk County Council
Gainsborough Clinic
Clapgate Lane, Ipswich, IP3 0RL
Tel: 01473 264644

27 April 2021

NHS number: «NHSNumber»

Dear Parent/Carer of «FirstName» «LastName»,

We recently wrote to you about measuring «FirstName»'s height and weight as part of the National Child Measurement Programme. Here are «FirstName»'s results:

«FirstName» «LastName»

Height (cm) «Height» **Weight (kg) «Weight»**

Date of measurement «DateOfMeasurement»

These results suggest that «FirstName»'s weight is above the expected level for their age.

If you would like to talk about these results please get in touch with us on 01473 275234. We will be very happy to help by answering any questions you may have.

- Because these results suggest that «FirstName»'s weight is above the expected level for their age, you may find it helpful to contact OneLife Suffolk and discuss «FirstName»'s overall health.
- OneLife Suffolk is a free local service supporting families with children above the expected weight for their age. The service offers programmes which are both informative and fun for children and their families. These programmes combine physical activity and games with educational activities.
- If you wish to book a place on the OneLife's Suffolk next available programme in your area, please contact them on 01473 718193 and visit their website www.onelifesuffolk.co.uk.

If you would like to find out more about how your child's weight compares with other children's weight, you can go to www.nhs.uk/BMI, and NHS.uk/C4L3. These websites allow you to check your expected child's weight for their height and age group. Please keep in mind that, as a child is still growing, they cannot be compared with adults.

The information on your child's weight is looked after by your Suffolk County Council's Children and Young People's team and is treated confidentially. We have sent you these results so that you have the best information to allow you to look after your child's health.

We recommend that you get in touch with your school nurse as they will be able to offer you additional support and more information that will make it easier to discuss this with «FirstName». We offer this support because research shows that children can experience social difficulties because of their weight.

Suffolk County Council welcomes your opinion about this NCMP letter. Please type ncmp.me/3b into your web browser to access our survey, and the chance to win one of four £25 vouchers. Thank you for reading this letter.

Yours sincerely,
[redacted] School Nurse Team Lead

Some medical conditions or treatment that your child is receiving may mean that BMI centile is not the best way to measure your child. Your GP or other health professional caring for your child will be able to discuss this with you
http://www.suffolk.gov.uk/CYPprivacynotice

Figure 10: Suffolk OW Experimental

2.4.2.8 Suffolk Very Overweight Letter (Control)

Private and confidential
Parent / Carer of Sarah Samuels
2 Cottage Road
Acomb
York
North Yorkshire

YO78 2EF

[redacted]
School Nurse Team Lead
Health, Wellbeing and Children's Services
Suffolk County Council
Gainsborough Clinic
Clapgate Lane, Ipswich, Suffolk.
IP3 0RL
Tel: 01473 264644

27 April 2021

NHS number: 4983198434

Dear Parent / Carer of Sarah Samuels,

We recently sent you a letter about measuring Sarah's height and weight in school as part of the National Child Measurement Programme. The measurements have now been taken and the results are below.

Seeing if your child's weight is within the healthy range for their age, sex and height can help you make informed choices about their lifestyle.

Sarah's results	
Height (cm)	98.3
Weight (kg)	13.75
Date of measurement	16 August 2013

These results suggest that your child is very overweight for their age, sex and height.

Being very overweight can lead to health problems for your child, such as high blood pressure, early signs of type 2 diabetes and low self-confidence. But you and your child can make simple changes to be more active and eat more healthily. As a first step, please call One Life Suffolk on 01473 718193 to find out how you can benefit from free local support. You can also:

- Go online for practical advice at: www.nhs.uk/change4life and www.nhs.uk/ncmp4

You can find out how Sarah's result was calculated and check how Sarah is growing over time, please visit www.nhs.uk/bmi.

This information has not been shared with Sarah or school staff. Locally, this information is held by Suffolk County Council's Children and Young People's team and is treated confidentially.

Thank you for reading this letter - we hope this information is useful to you. Please call and take advantage of the free support we offer. Suffolk County Council welcomes your feedback. Please type ncmp.me/4s into your web browser to access our survey, and the chance to win one of four £25 vouchers.

Yours sincerely,

[redacted] School Nurse Team Lead

Some medical conditions or treatment that your child is receiving may mean that BMI centile is not the best way to measure your child. Your GP or other health professional caring for your child will be able to discuss this with you.
http://www.suffolk.gov.uk/CYPprivacynotice

Figure 11: Suffolk VOW Control

2.4.2.9 Suffolk Very Overweight Letter (Experimental)

Private and Confidential
Parent/Carer of «FirstName» «LastName»
«Address1»
«Address2»
«Address3»
«Address4»
«Address5»
«Postcode»

[redacted]
School Nurse Team Lead
Health, Wellbeing and Children's Services
Suffolk County Council
Gainsborough Clinic
Clapgate Lane, Ipswich, IP3 0RL
Tel: 01473 264644

27 April 2021

NHS number: «NHSNumber»

Dear Parent/Carer of «FirstName» «LastName»,

We recently wrote to you about measuring «FirstName»'s height and weight as part of the National Child Measurement Programme. Here are «FirstName»'s results:

«FirstName» «LastName»
Height (cm) «Height» **Weight (kg) «Weight»**
Date of measurement «DateOfMeasurement»

These results suggest that «FirstName»'s weight is above the expected level for their age.

If you would like to talk about these results please get in touch with us on 01473 275234. We will be very happy to help by answering any questions you may have.

- Because these results suggest that «FirstName»'s weight is above the expected level for their age, you may find it helpful to contact OneLife Suffolk and discuss «FirstName»'s overall health.
- OneLife Suffolk is a free local service supporting families with children above the expected weight for their age. The service offers programmes which are both informative and fun for children and their families. These programmes combine physical activity and games with educational activities.
- If you wish to book a place on the OneLife's Suffolk next available programme in your area, please contact them on 01473 718193 and visit their website www.onelifesuffolk.co.uk

If you would like to find out more about how your child's weight compares with other children's weight, you can go to www.nhs.uk/BMI, and NHS.uk/C4L4. These websites allow you to check your expected child's weight for their height and age group. Please keep in mind that, as a child is still growing, they cannot be compared with adults.

The information on your child's weight is looked after by your Suffolk County Council's Children and Young People's team and is treated confidentially. We have sent you these results so that you have the best information to allow you to look after your child's health.

We recommend that you get in touch with your school nurse as they will be able to offer you additional support and more information that will make it easier to discuss this with «FirstName». We offer this support because research shows that children can experience social difficulties because of their weight.

Suffolk County Council welcomes your opinion about this NCMP letter. Please type ncmp.me/4b into your web browser to access our survey, and the chance to win one of four £25 vouchers. Thank you for reading this letter.

Yours sincerely,
[redacted] School Nurse Team Lead

Some medical conditions or treatment that your child is receiving may mean that BMI centile is not the best way to measure your child. Your GP or other health professional caring for your child will be able to discuss this with you
http://www.suffolk.gov.uk/CYPprivacynotice

Figure 12: Suffolk VOW Experimental

2.4.2.10 Lewisham Borough Underweight Letter (Control)

Lewisham

Lewisham and Greenwich NHS
NHS Trust

Private and confidential

School Health Service
Screening & Universal Team
Waldron Health Centre
London
SE14 6LD
Tel: 020 30493415
Lg.shsscreening@nhs.net

Parent/Carer of «FirstName» «LastName»

«Address1»
«Address2»
«Address3»
«Address4»
«Address5»
«Postcode»

24 July 2018

NHS number «NHSNumber»

Dear Parent/Carer of «FirstName» «LastName»,

We recently wrote to you about measuring «FirstName»'s height and weight as part of the National Child Measurement Programme. Here are «FirstName»'s measurements.

«FirstName» «LastName»

Height (cm) «Height» Weight (kg) «Weight»
Weight Status: underweight

Date of measurement «DateOfMeasurement»

When compared to the national growth charts, which show whether a child is growing as expected for their age, sex and height, «FirstName» would be considered to be underweight.

Most children who are underweight are perfectly healthy but some can develop health and wellbeing problems. If you would like to speak to us about your child's weight please call us on **0203 0493415.**

A good diet and physical activity are essential to maintaining a healthy weight and healthy growth. Visit NHS.uk/C4L1 for lots of handy tips.

Figure 13: Lewisham UW Control (1)

Lewisham

Lewisham and Greenwich NHS
NHS Trust

You can find out how «FirstName»'s result was calculated, and check how «FirstName» is growing over time, by going to www.nhs.uk/bmi.
This information has not been shared with «FirstName», other children or school staff. Locally, this information is held by your local NHS and local authority public health team and is treated confidentially. The results are sent to you, so the decision of whether to talk to your child about them is entirely yours. More information is available at NHS.uk/C4L1.

Some medical conditions or treatment that your child is receiving may mean that BMI centile is not the best way to measure your child. Your GP or other health professional caring for your child will be able to discuss this with you.

If you wish to discuss these results please contact the School Health Screening & Universal Team on **0203 0493415**.

Yours sincerely,

[redacted]

[redacted]

[redacted]

[redacted]

School Health Service Team Manager

Healthy Weight Strategy Manager

Figure 14: Lewisham UW Control (2)

2.4.2.11 Lewisham Borough Underweight Letter (Experimental)

Lewisham

Lewisham and Greenwich NHS
NHS Trust

Private and Confidential
Parent/Carer of «FirstName» «LastName»
«Address1»
«Address2»
«Address3»
«Postcode»

School Health Service
Screening & Universal Team
Waldron Health Centre
London
SE14 6LD

Tel: 02030493415
Email: lg.shsscreening@nhs.net

27 April 2021

Dear Parent/Carer of «FirstName» «LastName»,

We recently wrote to you about measuring «FirstName»'s height and weight as part of the National Child Measurement Programme. Here are «FirstName»'s results:

«FirstName» «LastName»	
Height (cm) «Height»	**Weight (kg) «Weight»**
Date of measurement «DateOfMeasurement»	

These results suggest that «FirstName»'s weight is below the expected level for their age.

If you would like to speak to a nurse from our health team about your child's health and these measurements, please get in touch with them on **0203 0493415.** They will be very happy to help by answering any questions you may have. You can also speak to your GP for further support.

If you would like to find out more about how your child's result compares with other children's result, you can go to www.nhs.uk/BMI, and NHS.uk/C4L1. These websites allow you to check your expected child's weight for their height and age group. Please keep in mind that, as a child is still growing, s/he cannot be compared with adults.

The information on your child's weight is looked after by Lewisham Council and is treated confidentially. We have sent you these results so that you have the best information to allow you to look after your child's health.

You do not have to discuss these results with «FirstName» if you do not wish to. However, we recommend that you get in touch with nurse from our health team. They will be able offer you additional support and more information that will make it easier to discuss this with «FirstName». We offer this support because research shows that children can experience social difficulties because of their weight.

Continued overleaf

Figure 15: Lewisham UW Experimental (1)

Lewisham

Lewisham and Greenwich NHS
NHS Trust

Lewisham Council welcomes your opinion about this NCMP letter. Please type ncmp.me/1u into your web browser to access our survey, and the chance to win one of four £35 vouchers. Thank you for reading this letter.

Yours sincerely,

[redacted]

[redacted]

[redacted]

Community Matron CYP Public &School Health

[redacted]

Public Health Strategist

Figure 16: Lewisham UW Experimental (2)

2.4.2.12 Lewisham Borough Healthy Weight Letter (Control)

Lewisham

Lewisham and Greenwich NHS
NHS Trust

Private and confidential

School Health Service
Screening & Universal Team
Waldron Health Centre
London
SE14 6LD
Tel: 020 30493415
Lg.shsscreening@nhs.net

Parent/Carer of «FirstName» «LastName»

«Address1»
«Address2»
«Address3»
«Address4»
«Address5»
«Postcode»

24 July 2018

NHS number «NHSNumber»

Dear Parent/Carer of «FirstName» «LastName»,

We recently wrote to you about measuring «FirstName»'s height and weight as part of the National Child Measurement Programme. Here are «FirstName»'s measurements.

«FirstName» «LastName»

Height (cm) «Height» **Weight (kg) «Weight»**
Weight Status: healthy weight

Date of measurement «DateOfMeasurement»

When compared to the national growth charts, which show whether a child is growing as expected for their age, sex and height, «FirstName» would be considered to be a **healthy weight**.

This is good news. It is important that «FirstName» maintains a healthy weight throughout childhood and into adulthood.

A good diet and physical activity are essential to maintaining a healthy weight and healthy growth. Visit NHS.uk/C4L2 for lots of handy tips.

Figure 17: Lewisham HW Control (1)

Lewisham

Lewisham and Greenwich NHS
NHS Trust

You can find out how «FirstName»'s result was calculated, and check how «FirstName» is growing over time, by going to www.nhs.uk/bmi.

This information has not been shared with «FirstName», other children or school staff. Locally, this information is held by your local NHS and Public Health Team and is treated confidentially. The results are sent to you, so the decision of whether to talk to your child about them is entirely yours. More information is available at NHS.uk/C4L2

Some medical conditions or treatment that your child is receiving may mean that BMI centile is not the best way to measure your child. Your GP or other health professional caring for your child will be able to discuss this with you.

If you wish to discuss these results please contact the School Health Screening & Universal Team on **0203 0493415**.

Yours sincerely,

[redacted]

[redacted]

[redacted]

[redacted]

School Health Service Team Manager

Healthy Weight Strategy Manager

Figure 18: Lewisham HW Control (2)

2.4.2.13 Lewisham Borough Healthy Weight Letter (Experimental)

Lewisham

Lewisham and Greenwich NHS
NHS Trust

Private and Confidential
Parent/Carer of «FirstName» «LastName»
«Address1»
«Address2»
«Address3»
«Postcode»

School Health Service
Screening & Universal Team
Waldron Health Centre
London
SE14 6LD

Tel: 02030493415
Email: lg.shsscreening@nhs.net

27 April 2021

Dear Parent/Carer of «FirstName» «LastName»,

We recently wrote to you about measuring «FirstName»'s height and weight as part of the National Child Measurement Programme. Here are «FirstName»'s results:

«FirstName» «LastName»	
Height (cm) «Height»	**Weight (kg) «Weight»**
Date of measurement «DateOfMeasurement»	

These results suggest that «FirstName»'s weight is at the expected level for their age.

If you would like to speak to a nurse from our health team about your child's health and these measurements, please get in touch with them on 0203 0493415. They will be very happy to help by answering any questions you may have.

If you would like to find out more about how your child's result compares with other children's result, you can go to www.nhs.uk/BMI, and NHS.uk/C4L2. These websites allow you to check your expected child's weight for their height and age group. Please keep in mind that, as a child is still growing, s/he cannot be compared with adults.

The information on your child's weight is looked after by Lewisham Council and is treated confidentially. We have sent you these results so that you have the best information to allow you to look after your child's health. You do not have to discuss these results with «FirstName» if you do not wish to.

Continued overleaf

Figure 19: Lewisham HW Experimental (1)

Lewisham

Lewisham and Greenwich NHS
NHS Trust

Lewisham Council welcomes your opinion about this NCMP letter. Please type ncmp.me/2u into your web browser to access our survey, and the chance to win one of four £35 vouchers. Thank you for reading this letter.

Yours sincerely,

[redacted]

[redacted]

[redacted]

Community Matron CYP Public &School Health

Public Health Strategist

Figure 20: Lewisham HW Experimental (2)

2.4.2.14 Lewisham Borough Overweight Letter RY (Control)

Lewisham

Lewisham and Greenwich NHS
NHS Trust

Private and confidential

School Health Service
Screening & Universal Team
Waldron Health Centre
London
SE14 6LD
Tel: 020 30493415
Lg.shsscreening@nhs.net

Parent/Carer of «FirstName» «LastName»

«Address1»
«Address2»
«Address3»
«Address4»
«Address5»
«Postcode»

24 July 2018

NHS number «NHSNumber»

Dear Parent/Carer of «FirstName» «LastName»,

We recently wrote to you about measuring «FirstName»'s height and weight as part of the National Child Measurement Programme. Here are «FirstName»'s measurements.

«FirstName» «LastName»

Height (cm) «Height» Weight (kg) «Weight»
Weight Status: overweight

Date of measurement «DateOfMeasurement»

«FirstName» is in the minority of children across the country who are overweight or very overweight for their age. 3 out of 4 children in Reception year have a healthier weight than «FirstName».

When compared to the national growth charts, which show whether a child is growing as expected for their age, sex and height, «FirstName» would be considered to be overweight.

Figure 21: Lewisham OW RY Control (1)

Lewisham

Lewisham and Greenwich NHS
NHS Trust

It is important to be aware that when a child has excess weight for their age it can lead to health problems like high blood pressure and early signs of type 2 diabetes as they grow up. Being overweight can also lead to low self-esteem and poor confidence.

What should I do now?
«FirstName» could come to the School Health MEND 5 -7 Healthy Lifestyle Programme, which is a free and fun after school programme to help children and their families achieve and maintain a healthier weight. See the enclosed leaflet or call **0203 0493415** or email lg.shsmendreferrals@nhs.net

A good diet and physical activity are important to ensure «FirstName» is a healthy weight as they grow up. Visit NHS.uk/C4L3 for lots of handy tips.

The Chief Medical Officer has advised that most children need at least 60 minutes of physical activity per day. This should be a mix of moderate activity like brisk walking and vigorous activity like running or fast cycling that make your heart beat faster.

You can find out how «FirstName»'s result was calculated, and check how «FirstName» is growing over time, by going to www.nhs.uk/bmi.

This information has not been shared with «FirstName», other children or school staff. Locally, this information is held by your local NHS and local authority public health team and is treated confidentially. The results are sent to you, so the decision of whether to talk to your child about them is entirely yours. More information is available at NHS.uk/C4L3.

Some medical conditions or treatment that your child is receiving may mean that BMI centile is not the best way to measure your child. Your GP or other health professional caring for your child will be able to discuss this with you.

If you wish to discuss these results please contact the School Health Screening & Universal Team on **0203 0493415.**

Yours sincerely,

[redacted]
School Health Service Team Manager

[redacted]
Healthy Weight Strategy Manager

Figure 22: Lewisham OW RY Control (2)

2.4.2.15 Lewisham Borough Overweight Letter RY (Experimental)

Lewisham

Lewisham and Greenwich NHS
NHS Trust

Private and Confidential
Parent/Carer of «FirstName» «LastName»
«Address1»
«Address2»
«Address3»
«Postcode»
«Address5»

School Health Service
Screening & Universal Team
Waldron Health Centre
London
SE14 6LD

Tel: 02030493415
Email: lg.shsscreening@nhs.net

27 April 2021

Dear Parent/Carer of «FirstName» «LastName»,

We recently wrote to you about measuring «FirstName»'s height and weight as part of the National Child Measurement Programme. Here are «FirstName»'s results:

«FirstName» «LastName»	
Height (cm) «Height»	**Weight (kg) «Weight»**
Date of measurement «DateOfMeasurement»	

These results suggest that «FirstName»'s weight is above the expected weight for their age.

If you would like to speak to a nurse from our health team about your child's health and these measurements, please get in touch with them on **0203 0493415.** They will be very happy to help by answering any questions you may have.

- Because these results suggest that «FirstName»'s weight is above the expected level for their age, «FirstName» could come to the School Health MEND 5 - 7 Healthy Lifestyle Programme.
- The programme delivers free family & young people's healthy lifestyle services across the council.
- The School Health 5 - 7 MEND Healthy Lifestyle Programme is a free local service supporting families with children above the expected weight for their age. The service offers programmes which are both informative and fun for children.
- If you would like to reserve «FirstName»'s place or support and advice about «FirstName»'s results, please see the enclosed leaflet, call 0203 0493415 or email lg.shsmendreferrals@nhs.net.

If you would like to find out more about how your child's result compares with other children's result, you can go to www.nhs.uk/BMI, and NHS.uk/C4L3. These websites allow you to check your expected child's weight for their height and age group. Please keep in mind that, as a child is still growing, s/he cannot be compared with adults.

Continued overleaf

Figure 23: Lewisham OW RY Experimental (1)

Lewisham

Lewisham and Greenwich NHS
NHS Trust

The information on your child's weight is looked after by Lewisham Council and is treated confidentially. We have sent you these results so that you have the best information to allow you to look after your child's health.

You do not have to discuss these results with «FirstName» if you do not wish to. However, we recommend that you get in touch with nurse from our health team. They will be able offer you additional support and more information that will make it easier to discuss this with «FirstName». We offer this support because research shows that children can experience social difficulties because of their weight.

Lewisham Council welcomes your opinion about this NCMP letter. Please type ncmp.me/u3 into your web browser to access our survey, and the chance to win one of four £35 vouchers. Thank you for reading this letter.

Yours sincerely,

[redacted]

[redacted]

[redacted]

[redacted]

Community Matron CYP Public &School Health

Public Health Strategist

Figure 24: Lewisham OW RY Experimental (2)

2.4.2.16 Lewisham Borough Overweight Letter Y6 (Control)

Lewisham

Lewisham and Greenwich NHS
NHS Trust

Private and confidential

School Health Service
Screening & Universal Team
Waldron Health Centre
London
SE14 6LD
Tel: 020 30493415
Lg.shsscreening@nhs.net

Parent/Carer of «FirstName» «LastName»

«Address1»
«Address2»
«Address3»
«Address4»
«Address5»
«Postcode»

24 July 2018

NHS number «NHSNumber»

Dear Parent/Carer of «FirstName» «LastName»,

We recently wrote to you about measuring «FirstName»'s height and weight as part of the National Child Measurement Programme. Here are «FirstName»'s measurements.

«FirstName» «LastName»

Height (cm) «Height» Weight (kg) «Weight»
Weight Status: overweight

Date of measurement «DateOfMeasurement»

«FirstName» is in the minority of children across the country who are overweight or very overweight for their age. 2 out of 3 children in Year 6 have a healthier weight than «FirstName».

When compared to the national growth charts, which show whether a child is growing as expected for their age, sex and height, «FirstName» would be considered to be overweight.

Figure 25: Lewisham OW Y6 Control (1)

Lewisham

Lewisham and Greenwich NHS
NHS Trust

It is important to be aware that when a child has excess weight for their age it can lead to health problems like high blood pressure and early signs of type 2 diabetes as they grow up. Being overweight can also lead to low self-esteem and poor confidence.

What should I do now?
«FirstName» could come to the School Health MEND 7- 12 Healthy Lifestyle Programme, which is a free and fun after school programme to help children and their families achieve and maintain a healthier weight. See the enclosed leaflet or call **0203 0493415** or email lg.shsmendreferrals@nhs.net

A good diet and physical activity are important to ensure «FirstName» is a healthy weight as they grow up. Visit NHS.uk/C4L3 for lots of handy tips.

The Chief Medical Officer has advised that most children need at least 60 minutes of physical activity per day. This should be a mix of moderate activity like brisk walking and vigorous activity like running or fast cycling that make your heart beat faster.

You can find out how «FirstName»'s result was calculated, and check how «FirstName» is growing over time, by going to www.nhs.uk/bmi.

This information has not been shared with «FirstName», other children or school staff. Locally, this information is held by your local NHS and local authority public health team and is treated confidentially. The results are sent to you, so the decision of whether to talk to your child about them is entirely yours. More information is available at NHS.uk/C4L3.

Some medical conditions or treatment that your child is receiving may mean that BMI centile is not the best way to measure your child. Your GP or other health professional caring for your child will be able to discuss this with you.

If you wish to discuss these results please contact the School Health Screening & Universal Team on **0203 0493415.**

Yours sincerely,

[redacted]
School Health Service Team Manager

[redacted]
Healthy Weight Strategy Manager

Figure 26: Lewisham OW Y6 Control (2)

2.4.2.17 Lewisham Borough Overweight Letter Y6 (Experimental)

Lewisham

Lewisham and Greenwich NHS
NHS Trust

Private and Confidential
Parent/Carer of «FirstName» «LastName»
«Address1»
«Address2»
«Address3»
«Postcode»
«Address5»

School Health Service
Screening & Universal Team
Waldron Health Centre
London
SE14 6LD

Tel: 02030493415
Email: lg.shsscreening@nhs.net

27 April 2021

Dear Parent/Carer of «FirstName» «LastName»,

We recently wrote to you about measuring «FirstName»'s height and weight as part of the National Child Measurement Programme. Here are «FirstName»'s results:

«FirstName» «LastName»	
Height (cm) «Height»	**Weight (kg) «Weight»**
Date of measurement «DateOfMeasurement»	

These results suggest that «FirstName»'s weight is above the expected weight for their age.

If you would like to speak to a nurse from our health team about your child's health and these measurements, please get in touch with them on **0203 0493415.** They will be very happy to help by answering any questions you may have.

- Because these results suggest that «FirstName»'s weight is above the expected level for their age, «FirstName» could come to the School Health MEND 7 - 12 Healthy Lifestyle Programme.
- The programme delivers free family & young people's healthy lifestyle services across the council.
- The School Health 7 – 12 MEND Healthy Lifestyle Programme is a free local service supporting families with children above the expected weight for their age. The service offers programmes which are both informative and fun for children.
- If you would like to reserve «FirstName»'s place or support and advice about «FirstName»'s results, please see the enclosed leaflet, call 0203 0493415 or email lg.shsmendreferrals@nhs.net.

If you would like to find out more about how your child's result compares with other children's result, you can go to www.nhs.uk/BMI, and NHS.uk/C4L3. These websites allow you to check your expected child's weight for their height and age group. Please keep in mind that, as a child is still growing, s/he cannot be compared with adults.

Continued overleaf

Figure 27: Lewisham OW Y6 Experimental (1)

Lewisham

Lewisham and Greenwich NHS
NHS Trust

The information on your child's weight is looked after by Lewisham Council and is treated confidentially. We have sent you these results so that you have the best information to allow you to look after your child's health.

You do not have to discuss these results with «FirstName» if you do not wish to. However, we recommend that you get in touch with nurse from our health team. They will be able offer you additional support and more information that will make it easier to discuss this with «FirstName». We offer this support because research shows that children can experience social difficulties because of their weight.

Lewisham Council welcomes your opinion about this NCMP letter. Please type ncmp.me/u3 into your web browser to access our survey, and the chance to win one of four £35 vouchers. Thank you for reading this letter.

Yours sincerely,

[redacted]

[redacted]

[redacted]

Community Matron CYP Public &School Health

[redacted]

Public Health Strategist

Figure 28: Lewisham OW Y6 Experimental (2)

2.4.2.18 Lewisham Borough Very Overweight Letter RY (Control)

Lewisham

Lewisham and Greenwich NHS
NHS Trust

Private and confidential

School Health Service
Screening & Universal Team
Waldron Health Centre
London
SE14 6LD
Tel: 020 30493415
Lg.shsscreening@nhs.net

Parent/Carer of «FirstName» «LastName»

«Address1»
«Address2»
«Address3»
«Address4»
«Address5»
«Postcode»

24 July 2018

NHS number «NHSNumber»

Dear Parent/Carer of «FirstName» «LastName»,

We recently wrote to you about measuring «FirstName»'s height and weight as part of the National Child Measurement Programme. Here are «FirstName»'s measurements.

«FirstName» «LastName»

Height (cm) «Height» **Weight (kg) «Weight»**
Weight Status: very overweight

Date of measurement «DateOfMeasurement»

«FirstName» is in the minority of children across the country who are overweight or very overweight for their age. 3 out of 4 children in Reception year have a healthier weight than «FirstName».

When compared to the national growth charts, which show whether a child is growing as expected for their age, sex and height, «FirstName» would be considered to be very overweight. It is important to be aware that when a child has excess weight for their age it can lead to health problems like high blood pressure and early signs of type 2 diabetes as they grow up. Being overweight can also lead to low self-esteem and poor confidence.

Figure 29: Lewisham VOW RY Control (1)

Lewisham

Lewisham and Greenwich NHS
NHS Trust

«FirstName» has been reserved a place on the School Health 5- 7 MEND Healthy Lifestyle Programme.

This is a free and fun after school programme to help families achieve and maintain a healthier weight. Please see the enclosed leaflet and contact us to take up this offer by post, phone or email.

Post: Return the enclosed registration form in the FREEPOST envelope enclosed.
Phone: Call the local child and family weight management service on 0203 0493415
Email: lg.shsmendreferrals@nhs.net

A good diet and physical activity are important to ensure «FirstName» is a healthy weight as they grow up. Visit NHS.uk/C4L4 for lots of handy tips.

You can find out how «FirstName»'s result was calculated, and check how «FirstName» is growing over time, by going to www.nhs.uk/bmi.

This information has not been shared with «FirstName», other children or school staff. Locally, this information is held by your local NHS and the local authority public health team and is treated confidentially. The results are sent to you, so the decision of whether to talk to your child about them is entirely yours. More information is available at NHS.uk/C4L4.

Some medical conditions or treatment that your child is receiving may mean that BMI centile is not the best way to measure your child. Your GP or other health professional caring for your child will be able to discuss this with you.

If you wish to discuss these results please contact the School Health Screening & Universal Team on **0203 0493415.**

Yours sincerely,

[redacted]

[redacted]

[redacted]

[redacted]

School Health Service Team Manager

Healthy Weight Strategy Manager

Figure 30: Lewisham VOW RY Control (2)

2.4.2.19 Lewisham Borough Very Overweight Letter RY (Experimental)

Lewisham

Lewisham and Greenwich NHS
NHS Trust

Private and Confidential
Parent/Carer of «FirstName» «LastName»
«Address1»
«Address2»
«Address3»
«Postcode»
«Address5»

School Health Service
Screening & Universal Team
Waldron Health Centre
London
SE14 6LD

Tel: 02030493415
Email: lg.shsscreening@nhs.net

21 March 2019

Dear Parent/Carer of «FirstName» «LastName»,

We recently wrote to you about measuring «FirstName»'s height and weight as part of the National Child Measurement Programme. Here are «FirstName»'s results:

«FirstName» «LastName»	
Height (cm) «Height»	**Weight (kg) «Weight»**
Date of measurement «DateOfMeasurement»	

These results suggest that «FirstName»'s weight is above the expected weight for their age.

If you would like to speak to a nurse form our health team about your child's health and these measurements, please get in touch with them on **0203 0493415.** They will be very happy to help by answering any questions you may have.

- Because these results suggest that «FirstName»'s weight is above the expected level for their age, we have reserved a place for you and «FirstName» on the School Health 5 - 7 MEND Healthy Lifestyle Programme.
- The programme delivers free family & young people's healthy lifestyle services across the council.
- The School Health 5 - 7 MEND Healthy Lifestyle Programme is a free local service supporting families with children above the expected weight for their age. The service offers programmes which are both informative and fun for children and their families.
- Please contact the School Health 5 - 7 MEND Healthy Lifestyle Programme on 0203 0493415 or lg.shsmendreferrals@nhs.net to claim your and «FirstName»'s place, or if you would like support or advice about «FirstName»'s results.

If you would like to find out more about how your child's result compares with other children's result, you can go to www.nhs.uk/BMI, and NHS.uk/C4L3. These websites allow you to check your expected child's weight for their height and age group. Please keep in mind that, as a child is still growing, s/he cannot be compared with adults.

Continue overleaf

Figure 31: Lewisham VOW RY Experimental (1)

Lewisham

Lewisham and Greenwich NHS
NHS Trust

The information on your child's weight is looked after by your Lewisham Council and is treated confidentially. We have sent you these results so that you have the best information to allow you to look after your child's health.

You do not have to discuss these results with «FirstName» if you do not wish to. However, we recommend that you get in touch with nurse from our health team. They will be able offer you additional support and more information that will make it easier to discuss this with «FirstName». We offer this support because research shows that children can experience social difficulties because of their weight.

Lewisham Council welcomes your opinion about this NCMP letter. Please type ncmp.me/u4 into your web browser to access our survey, and the chance to win one of four £35 vouchers. Thank you for reading this letter.

Yours sincerely,

[redacted]

[redacted]

[redacted]

[redacted]

Community Matron CYP Public &School Health

Public Health Strategist

Figure 32: Lewisham VOW RY Experimental (2)

2.4.2.20 Lewisham Borough Very Overweight Letter Y6 (Control)

Lewisham

Lewisham and Greenwich NHS
NHS Trust

Private and confidential

School Health Service
Screening & Universal Team
Waldron Health Centre
London
SE14 6LD
Tel: 020 30493415
Lg.shsscreening@nhs.net

Parent/Carer of «FirstName» «LastName»

«Address1»
«Address2»
«Address3»
«Address4»
«Address5»
«Postcode»

24 July 2018

NHS number «NHSNumber»

Dear Parent/Carer of «FirstName» «LastName»,

We recently wrote to you about measuring «FirstName»'s height and weight as part of the National Child Measurement Programme. Here are «FirstName»'s measurements.

«FirstName» «LastName»

Height (cm) «Height» **Weight (kg) «Weight»**
Weight Status: very overweight

Date of measurement «DateOfMeasurement»

«FirstName» is in the minority of children across the country who are overweight or very overweight for their age. 2 out of 3 children in Year 6 have a healthier weight than «FirstName».

When compared to the national growth charts, which show whether a child is growing as expected for their age, sex and height, «FirstName» would be considered to be very overweight. It is important to be aware that when a child has excess weight for their age it can lead to health problems like high blood pressure and early signs of type 2 diabetes as they grow up. Being overweight can also lead to low self-esteem and poor confidence.

Figure 33: Lewisham VOW Y6 Control (1)

Lewisham

Lewisham and Greenwich NHS
NHS Trust

«FirstName» has been reserved a place on the School Health 7 -12 MEND Healthy Lifestyle Programme.

This is a free and fun after school programme to help families achieve and maintain a healthier weight. Please see the enclosed leaflet and contact us to take up this offer by post, phone or email.

Post: Return the enclosed registration form in the FREEPOST envelope enclosed.
Phone: Call the local child and family weight management service on 0203 0493415
Email: lg.shsmendreferrals@nhs.net

A good diet and physical activity are important to ensure «FirstName» is a healthy weight as they grow up. Visit NHS.uk/C4L4 for lots of handy tips.

You can find out how «FirstName»'s result was calculated, and check how «FirstName» is growing over time, by going to www.nhs.uk/bmi.

This information has not been shared with «FirstName», other children or school staff. Locally, this information is held by your local NHS and the local authority public health team and is treated confidentially. The results are sent to you, so the decision of whether to talk to your child about them is entirely yours. More information is available at NHS.uk/C4L4.

Some medical conditions or treatment that your child is receiving may mean that BMI centile is not the best way to measure your child. Your GP or other health professional caring for your child will be able to discuss this with you.

If you wish to discuss these results please contact the School Health Screening & Universal Team on **0203 0493415.**

Yours sincerely,

[redacted]

[redacted]

[redacted]

School Health Service Team Manager

[redacted]

Figure 34: Lewisham VOW Y6 Control (2)

2.4.2.21 Lewisham Borough Very Overweight Letter Y6 (Experimental)

Lewisham

Lewisham and Greenwich NHS
NHS Trust

Private and Confidential
Parent/Carer of «FirstName» «LastName»
«Address1»
«Address2»
«Address3»
«Postcode»
«Address5»

School Health Service
Screening & Universal Team
Waldron Health Centre
London
SE14 6LD

Tel: 02030493415
Email: lg.shsscreening@nhs.net

21 March 2019

Dear Parent/Carer of «FirstName» «LastName»,

We recently wrote to you about measuring «FirstName»'s height and weight as part of the National Child Measurement Programme. Here are «FirstName»'s results:

«FirstName» «LastName»	
Height (cm) «Height»	**Weight (kg) «Weight»**
Date of measurement «DateOfMeasurement»	

These results suggest that «FirstName»'s weight is above the expected weight for their age.

If you would like to speak to a nurse form our health team about your child's health and these measurements, please get in touch with them on **0203 0493415.** They will be very happy to help by answering any questions you may have.

- Because these results suggest that «FirstName»'s weight is above the expected level for their age, we have reserved a place for you and «FirstName» on the School Health 7 – 12 MEND Healthy Lifestyle Programme.
- The programme delivers free family & young people's healthy lifestyle services across the council.
- The School Health 7 – 12 MEND Healthy Lifestyle Programme is a free local service supporting families with children above the expected weight for their age. The service offers programmes which are both informative and fun for children and their families.
- Please contact the School Health 7 – 12 MEND Healthy Lifestyle Programme on 0203 0493415 or lg.shsmendreferrals@nhs.net to claim your and «FirstName»'s place, or if you would like support or advice about «FirstName»'s results.

If you would like to find out more about how your child's result compares with other children's result, you can go to www.nhs.uk/BMI, and NHS.uk/C4L3. These websites allow you to check your expected child's weight for their height and age group. Please keep in mind that, as a child is still growing, s/he cannot be compared with adults.

Continued overleaf

Figure 35: Lewisham VOW Y6 Experimental (1)

Lewisham

Lewisham and Greenwich NHS
NHS Trust

The information on your child's weight is looked after by your Lewisham Council and is treated confidentially. We have sent you these results so that you have the best information to allow you to look after your child's health.

You do not have to discuss these results with «FirstName» if you do not wish to. However, we recommend that you get in touch with nurse from our health team. They will be able offer you additional support and more information that will make it easier to discuss this with «FirstName». We offer this support because research shows that children can experience social difficulties because of their weight.

Lewisham Council welcomes your opinion about this NCMP letter. Please type ncmp.me/u4 into your web browser to access our survey, and the chance to win one of four £35 vouchers. Thank you for reading this letter.

Yours sincerely,

[redacted]

[redacted]

[redacted]

[redacted]

Community Matron CYP Public &School Health

Public Health Strategist

Figure 36: Lewisham VOW Y6 Experimental (2)

2.4.3 Questionnaire – Qualtrics Survey Design

The following attachment shows the structure of the survey blocks designed in Qualitrcs™.

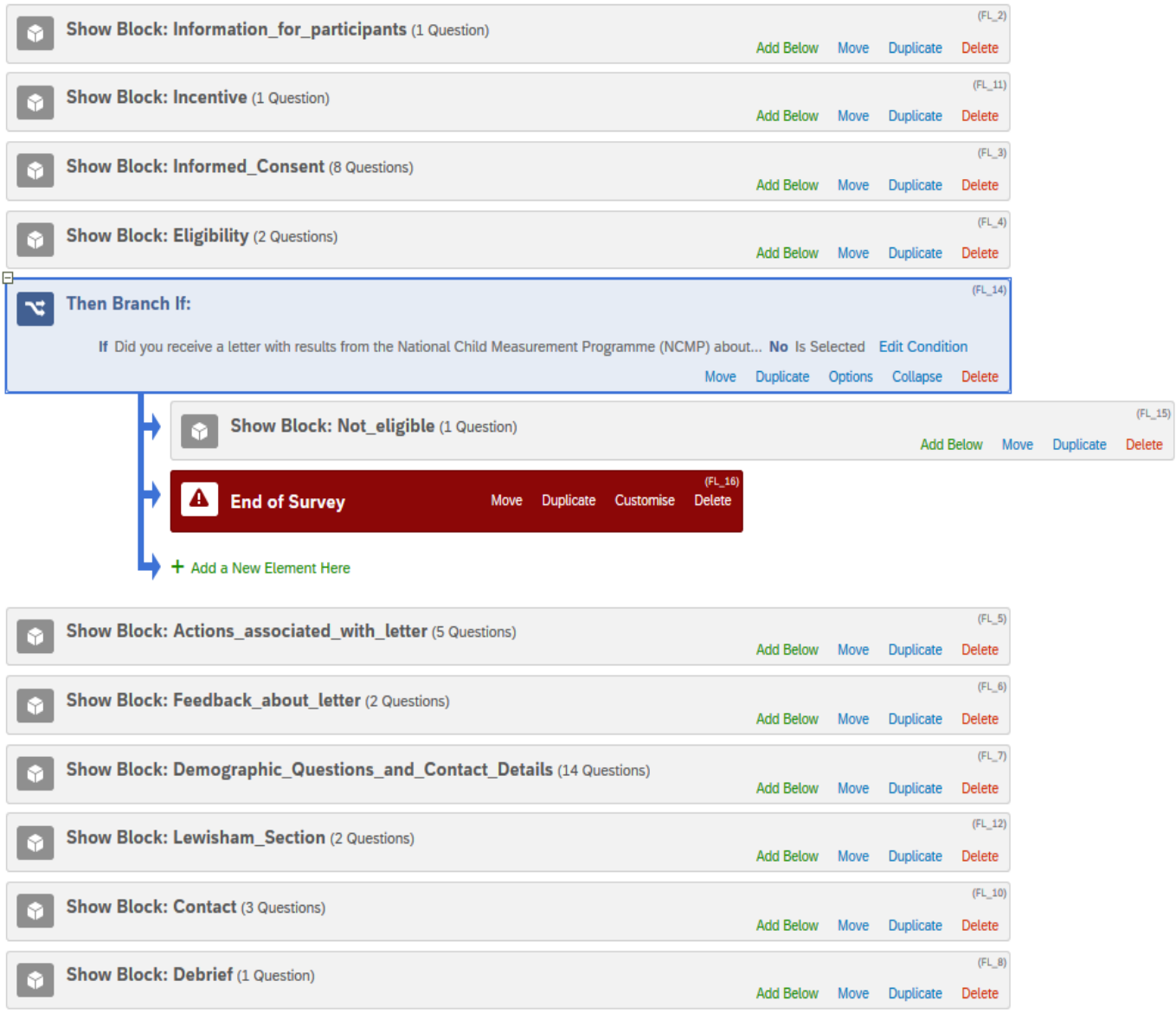


Figure 37: Qualtrics Survey Design

2.4.4 Questionnaire – Suffolk

2.4.4.1 Notice

The surveys for each weight category were **identical** (the version below was administered to parents who received a very overweight result in the letter). The versions for each site were very similar. Therefore, further examples for each site show **only additional questions**.

LetterExp - ncmp.me/4s - VOW

Start of Block:

2.4.4.2 Information for participants

Q1 Survey Information

Hello, thank you for agreeing to take part in this short survey. Before participating in the survey, please read this information sheet carefully. You will be asked to provide online consent before you can proceed to answer the survey questions.

How long does the survey take to complete?

The survey takes 5 - 10 minutes to complete.

How do I participate?

You must be aged over 18 years and provide consent after you read this information sheet. To give consent, you will need to select "Yes" for each statement on the next page.

Who can participate?

You must be a parent or a carer aged over 18 years and live in Suffolk County. You received the NCMP (National Child Measurement Programme) letter about your child.

What happens if I do not want to take part or if I change my mind?

Participation is voluntary. If you don't want to participate, simply close the page. If you complete the survey and then wish to remove your data, you can do so before the 30th September 2019.

What is the aim of the survey?

The survey explores your opinions and experience of the NCMP letter that you recently received from Suffolk County Council.

What are the benefits of participating in the survey for you?

1) Your feedback may improve the delivery of the NCMP in Suffolk.

2) At end of the survey, you will have a chance to enter a raffle to win one of four £25 Amazon vouchers; you will need to provide your email address or phone number to be eligible to enter the raffle.

Are there any risks of participating in the survey?

There are no expected risks of participating in the survey. If you have any concerns, please contact me or Dr Nicola Kime (N.Kime@leedsbeckett.ac.uk) who is a Research Ethics Coordinator for the School of Sport at Leeds Beckett University and has provided ethical approval for this study.

Are results of this survey published?

Once all data are anonymised, the results of this survey will be presented in doctoral dissertation and may be presented in various forms at international conferences, reports, and in journal publications with your permission.

What about my privacy?

The data you provide will be anonymised and stored in line with Leeds Beckett University's data protection policy and treated according to the Data Protection Act (DPA; 1998), and The General Data Protection Regulation (GDPR; 2016/679). Information such as email or phone number will be stored separately from any demographic data you provide. This means you remain anonymous and your confidentiality is respected at all times. The only person who will have the access to the emails or phone numbers is me, the principal investigator (Martin Čadek). This information will be used either to inform you that you have won the raffle prize or invite you to an additional research conducted at Leeds Beckett University.

Who has developed the survey?

My name is Martin Čadek (M.Cadek@leedsbeckett.ac.uk) and I am the lead researcher who developed this survey. I am a PhD student at Leeds Beckett University and your contact. My PhD supervisor is Dr Stuart Flint (S.W.Flint@leedsbeckett.ac.uk) who you may also contact. Thank you for reading this survey information sheet.

Page Break

End of Block: Study2_Information_for_participants

2.4.4.3 Informed Consent

Start of Block: Study2_Informed_Consent

Q2 Declaration of informed consent to participate in the survey

Q3 I confirm that I have read and understood the survey information, had the opportunity to consider the information, and where necessary, ask questions which have been answered satisfactorily.

o Yes (1)

o No (2)

Q4 I understand that I am under no obligation to take part in the survey and that my participation is voluntary.

o Yes (1)

o No (2)

Q5 I understand that to withdraw my responses after submitting the survey, I can contact Martin Čadek. I can do this up until the 30th September 2019.

o Yes (1)

o No (2)

Q6 I understand that all the information I provide will be treated in the strictest confidence and kept anonymous. I give permission for the researchers at Leeds Beckett University to have access to the information I provide.

o Yes (1)

o No (2)

Q7 I understand that the findings from the survey will be used in the publication of journal articles, reports, conference presentations and as part of a PhD thesis. I understand that I will not be named in any publications. I give my permission for the researchers at Leeds Beckett University to use my data in publications.

o Yes (1)

o No (2)

Q8 I agree to the researchers at Leeds Beckett University contacting me about my potential involvement in a follow-up survey, study, or interview.

o Yes (1)

o No (2)

Q9 I agree to participate in the survey.

o Yes (1)

o No (2)

Skip To: End of Survey If I agree to participate in the survey. = No

Page Break

End of Block: Study2_Informed_Consent

2.4.4.4 The Survey

Start of Block: Actions associated with letter

Q10

Please answer all of the questions below. They're related directly to the letter you've used to access this survey.

Q11

Did you use the "http://www.nhs.uk/BMI" web link provided in the letter?

o Yes (1)

o No (2)

Q12 Did you use the "NHS.uk/C4L" web link provided in the letter?

o Yes (1)

o No (2)

Q13 Did you contact (e.g., sent an email, called, visited) OneLife Suffolk because of the letter?

o Yes (1)

o No (2)

Q14 Did you contact (e.g., sent an email, called, visited) a GP/Doctor because of the letter?

o Yes (1)

o No (2)

Q15 Did you contact (e.g., sent an email, called, visited) a School nurse or nursing team because of the letter?

o Yes (1)

o No (2)

Q16 Did you share the letter's result with your child? (e.g., discussed the results, presented them information regarding the result, mentioned their weight).

o Yes (1)

o No (2)

Q17 After receiving the letter has this changed your opinion of your child's weight?

o Yes (1)

o No (2)

Page Break

End of Block: Actions associated with letter

2.4.4.5 The User Experience Questionnaire (Survey Version)

Start of Block: Feedback about letter

Q18 The letter that you've received contains your child's NCMP measurement result and relevant information. We want to know if the letter communicates the results and information in an acceptable format.

The questionnaire below asks you about the format of the NCMP letter that you've received. The questionnaire consists of pairs of contrasting (i.e.: opposing) adjectives (e.g.: attractive - unattractive). For each adjective, please express your degree of agreement with the format of the letter by ticking a circle (i.e., selecting circle closer to the adjective means you agree more with it).

Please see this example below:

Example:

attractive	○	⊗	○	○	○	○	○	unattractive

The example means that the person "agrees" more with the adjective on left side.

Please tick a circle in every line even if you are not completely sure on your agreement with some of the adjectives.

Figure 38: The Example of Instruction for the UEQ

Q19 Please evaluate the format of the NCMP letter you received by ticking one circle per pair of the adjectives.

annoying	○ ○ ○ ○ ○ ○ ○	enjoyable
not understandable	○ ○ ○ ○ ○ ○ ○	understandable
creative	○ ○ ○ ○ ○ ○ ○	dull
easy to learn	○ ○ ○ ○ ○ ○ ○	difficult to learn
valuable	○ ○ ○ ○ ○ ○ ○	inferior
boring	○ ○ ○ ○ ○ ○ ○	exciting
not interesting	○ ○ ○ ○ ○ ○ ○	interesting
unpredictable	○ ○ ○ ○ ○ ○ ○	predictable
fast	○ ○ ○ ○ ○ ○ ○	slow
inventive	○ ○ ○ ○ ○ ○ ○	conventional
obstructive	○ ○ ○ ○ ○ ○ ○	supportive
good	○ ○ ○ ○ ○ ○ ○	bad
complicated	○ ○ ○ ○ ○ ○ ○	easy
unlikable	○ ○ ○ ○ ○ ○ ○	pleasing
usual	○ ○ ○ ○ ○ ○ ○	leading edge
unpleasant	○ ○ ○ ○ ○ ○ ○	pleasant
secure	○ ○ ○ ○ ○ ○ ○	not secure
motivating	○ ○ ○ ○ ○ ○ ○	demotivating
meets expectations	○ ○ ○ ○ ○ ○ ○	does not meet expectations
inefficient	○ ○ ○ ○ ○ ○ ○	efficient
clear	○ ○ ○ ○ ○ ○ ○	confusing
impractical	○ ○ ○ ○ ○ ○ ○	practical
organized	○ ○ ○ ○ ○ ○ ○	cluttered
attractive	○ ○ ○ ○ ○ ○ ○	unattractive
friendly	○ ○ ○ ○ ○ ○ ○	unfriendly
conservative	○ ○ ○ ○ ○ ○ ○	innovative

Figure 39: The UEQ Survey in Qualitrcs

Page Break

End of Block: Feedback about letter

Start of Block: Contact details

Q20 Please identify yourself either as a father, mother or someone else taking care of the child who is named in the letter:

o Father (1)

o Mother (2)

o Other carer (e.g. grandparent, brother) (4)

o Refuse to say (5)

Q21 Is your child, who you received the NCMP letter about, male or female?

o Male (1)

o Female (2)

o Refuse to say (4)

Q22 Is your child, who you received the NCMP letter about, in the Reception Year (aged 4 - 5) or in the Year 6 (aged 10 - 11)?

o Reception Year (aged 4 - 5) (1)

o Year 6 (aged 10 - 11) (2)

o Refuse to say (4)

Q23 Do you have any other children?

o Yes, and they've received the NCMP (1)

o Yes, but they have not received the NCMP (2)

o No (3)

o Refuse to say (4)

Q24 What is the name of the school attended by your child, who received the NCMP letter? (e.g.: Otley Primary School)

_____

Q25 Do you own a car?

o Yes (1)

o No (2)

o Refuse to say (3)

Q26 What is your ethnicity?

o Asian (1)

o Black (2)

o White (3)

o Mixed (4)

o Other (5)

o Refuse to say (9)

Q27 What is the highest qualification you have received?

o Primary school (1)

o GCSEs or equivalent (9)

o A-Levels or equivalent (10)

o University undergraduate programme (11)

o University post-graduate programme (12)

o Doctoral degree (13)

o Refuse to say (14)

Q28 Please select the weight status you consider yourself to be?

o Healthy Weight (1)

o Underweight (2)

o Overweight (3)

o Very overweight (4)

o Refuse to say (5)

Page Break

Q29 Please provide any contact information below that can be used for an invitation to additional research in the future. By filling any contact information, you will be included in a raffle to win one of four £25 Amazon vouchers.

Q30 UK Phone Number (optional):

_____

Q31 Email (optional):

_____

Page Break

End of Block: Contact details

2.4.4.6 Debrief

Start of Block: Debrief

Q32 Debrief Document

You have just completed a survey exploring your opinions and user experience about the National Child Measurement Programme (NCMP) you have received.

The letter that you've received is one of two versions that are sent to parents or carers this year.

The first set of letters are customised based on the child's measurement. This is the standard procedure across England, and most parents in Suffolk will have received this version of the letters.

The second set of letters were sent to selected schools that were eligible. They were also customised according to the child's measurement. They differ only in the way that the results are presented to parents.

Participation in the survey should not pose any serious risks or cause any harm. However, you could have experienced something that has decreased your comfort. If this is the case, please contact either of us using the details below.

If you have any questions about your participation or the findings of this study, please do not hesitate to contact the principal investigator Martin Čadek (at M.Cadek@leedsbeckett.ac.uk or Number), or supervisor Dr Stuart W. Flint (at S.W.Flint@leedsbeckett.ac.uk or Number). We are happy to receive any questions about the survey or provide further information where necessary. We would like to take this opportunity to thank you again for your participation.

Page Break

End of Block: Debrief

2.4.5 Questionnaire – Lewisham (selected questions)

The following questions were asked in addition to the previous questionnaire versions.

Is your main language English?

- Yes
- No
- Refuse to say

Who is responsible for taking care of the child who you received the NCMP letter about?

- I am a single parent
- I share the care of my child with someone else (a partner, an ex-partner, a grandparent/relative, a paid caregiver such as nanny)
- Refuse to say

Are your day-to-day activities limited because of a health problem or disability which has lasted, or is expected to last, at least 12 months?

- Yes, limited a lot
- Yes, limited a little
- No
- Refuse to say

Which statement best describes your current employment status?

- Working (full-time employee or business owner)
- Working (self-employed)
- Working (part-time)
- Not working (temporary layoff from a job)
- Not working (retired)
- Not working (looking for work)
- Not working (disabled)
- Not working (other)
- Refuse to say

2.4.6 Questionnaire – National (selected questions)

The following questions were asked in addition to the previous questionnaire versions.

We will donate 1£ to a charitable cause for every participant that completed this survey until total of 200£ is reached. Which charity do you wish us to support?

- Save the Children UK
- British Hearth Foundation
- Please do not donate to a charitable cause

Did you receive a letter with results from the National Child Measurement Programme (NCMP) about weight and height of your child?

- Yes
- No

Please select a date when did you receive the letter:

Did you contact (e.g., sent an email, phone call, visited) any lifestyle service because of the letter?

What is your child's height according to the letter?

What is your child's weight according to the letter?

According to the letter, your child's weight status would be considered (Please select the weight status written inside the letter)?

- Underweight
- Healthy weight
- Overweight
- Very overweight
- Not applicable
- Refuse to say

Did you complete this survey for any other children?

- Yes
- No

Please provide first part of your postcode:

Is your child attending school in Lewisham borough?

- Yes
- No

What is the name of the school attended by your child, who received the NCMP letter? (e.g.: Otley Primary School)

Do you wish to be contacted about your potential involvement in a follow-up survey, study, or interview?

- Yes
- No

Please provide any contact information we can use to contact you about your potential involvement in a follow-up survey, study, or interview.

- Email (optional):
- Phone (optional):

2.4.7 User Experience Questionnaire (Original)

Please make your evaluation now.

For the assessment of the product, please fill out the following questionnaire. The questionnaire consists of pairs of contrasting attributes that may apply to the product. The circles between the attributes represent gradations between the opposites. You can express your agreement with the attributes by ticking the circle that most closely reflects your impression.

Example:

attractive	○	⊗	○	○	○	○	○	unattractive

This response would mean that you rate the application as more attractive than unattractive.

Please decide spontaneously. Don't think too long about your decision to make sure that you convey your original impression.

Sometimes you may not be completely sure about your agreement with a particular attribute or you may find that the attribute does not apply completely to the particular product. Nevertheless, please tick a circle in every line.

It is your personal opinion that counts. Please remember: there is no wrong or right answer!

Figure 40: The UEQ Original Form (1)

(Laugwitz et al., 2008)

Please assess the product now by ticking one circle per line.

	1	2	3	4	5	6	7		
annoying	○	○	○	○	○	○	○	enjoyable	1
not understandable	○	○	○	○	○	○	○	understandable	2
creative	○	○	○	○	○	○	○	dull	3
easy to learn	○	○	○	○	○	○	○	difficult to learn	4
valuable	○	○	○	○	○	○	○	inferior	5
boring	○	○	○	○	○	○	○	exciting	6
not interesting	○	○	○	○	○	○	○	interesting	7
unpredictable	○	○	○	○	○	○	○	predictable	8
fast	○	○	○	○	○	○	○	slow	9
inventive	○	○	○	○	○	○	○	conventional	10
obstructive	○	○	○	○	○	○	○	supportive	11
good	○	○	○	○	○	○	○	bad	12
complicated	○	○	○	○	○	○	○	easy	13
unlikable	○	○	○	○	○	○	○	pleasing	14
usual	○	○	○	○	○	○	○	leading edge	15
unpleasant	○	○	○	○	○	○	○	pleasant	16
secure	○	○	○	○	○	○	○	not secure	17
motivating	○	○	○	○	○	○	○	demotivating	18
meets expectations	○	○	○	○	○	○	○	does not meet expectations	19
inefficient	○	○	○	○	○	○	○	efficient	20
clear	○	○	○	○	○	○	○	confusing	21
impractical	○	○	○	○	○	○	○	practical	22
organized	○	○	○	○	○	○	○	cluttered	23
attractive	○	○	○	○	○	○	○	unattractive	24
friendly	○	○	○	○	○	○	○	unfriendly	25
conservative	○	○	○	○	○	○	○	innovative	26

Figure 41: The UEQ Original Form (2)

(Laugwitz et al., 2008)

2.4.8 Recruitment

2.4.8.1 Email to Parents Suffolk

Recipient: Parent(s) and carer(s)

Subject of e-mail: Brief 5-minute survey about the NCMP letters

<<GREETING LINE>>,

As part of the National Child Measurement Programme (NCMP), most children in the Reception year and Year 6 were weighed and measured at schools.

If you are a parent or carer of Year 6 or Reception year pupil who was measured, you've been sent the NCMP letter by post. The letter includes the results of the measurement and was delivered by the NCMP team at Suffolk County Council who are working with researchers at Leeds Beckett University to improve the NCMP letters.

<<NAME OF SCHOOL>> has been emailed by the researchers who wish to contact parents and carers regarding their opinion of the NCMP letters. Your feedback will provide essential information for the future delivery of the NCMP in Suffolk.

If you wish to provide the feedback, please use the link (type it into an internet web browser) at the end of NCMP letters you've received after your child was measured. Every letter has a link. All parents or carers who provide feedback will have an opportunity to win one of four £25 vouchers for an online retailer.

The survey takes up to 5-minutes to complete.

If you don't have the letters anymore or if you need more information regarding the feedback, please contact m.cadek@leedsbeckett.ac.uk from Leeds Beckett University.

Kind regards,

<<SCHOOL REPRESENTATIVE>>

2.4.8.2 Newsletter Suffolk

Title: Parent's feedback for National Child Measurement Programme (NCMP) results letters

Section: FOR INFORMATION | ALL SCHOOLS

Text:

As part of the NCMP, children are weighed and measured at school. The programme delivers world class data and information is used by the NHS to plan and provide an improved health services for children. After the measurement, results letters are sent to parents of year six and reception year pupils.

Public Health Suffolk is working with Leeds Beckett University to review the NCMP results letters. All letters have a link to an online survey attached at the end requesting feedback on the format of these letters.

We ask all schools to encourage parents (e.g. using parent emails, or direct contact) to complete a 5-minute survey to provide feedback on the measurements results letters.

If you wish to encourage parents, please send them the link below (e.g. using parent emails, or direct contact). The survey takes up to 5-minutes to complete.

https://ncmp.me/survey

Feedback from this survey will provide essential information for the future delivery of the NCMP in Suffolk. For every parent or carer who provides feedback, the researchers will donate £1 to a charitable cause.

For more information regarding the study, please contact m.cadek@leedsbeckett.ac.uk from Leeds Beckett University

2.4.8.3 Emails to Parents Lewisham

To all schools,

Lewisham is working with a team of researchers at Leeds Beckett University to review the National Child Measurement Programme (NCMP), and specifically the result letters. This review is part of a national research project that is supported by the NCMP at Public Health England.

We are currently in the process of engaging with parents to ask them for their opinion regarding the NCMP result letters. We are contacting you to ask if you would be willing to help us reach parents at your school via parent mail and the template message provided in this email (please feel free to modify the template).

The NCMP is distributed to almost 70 primary schools in Lewisham each year. It is crucial that we know the opinion of as many parents as possible to understand how we can further improve the NCMP result letters and the information provided to families.

If you have any questions, please contact Martin Čadek at Number or M.Cadek@leedsbeckett.ac.uk who can provide you with further information.

Thank you for reading this email. We appreciate any help you can offer.

Kind regards,

Gwenda Scott, Lewisham Council

Martin Čadek, PhD Student

Dr Stuart Flint, Senior Research Fellow

Professor Ralph Tench, Director of Research

Template for parents

<<INSERT SCHOOL NAME>> has been emailed by the researchers from Leeds Beckett University who wish to contact parents and carers of Year 6 and Reception year pupils regarding their opinion of the National Child Measurement Programme letters. Your feedback will provide essential information for the future delivery of the NCMP letters.

If you wish to provide the feedback, please use the link below. The survey takes up to 5-minutes to complete.

https://ncmp.me/survey

For every parent or carer who provided feedback, the researchers will donate £1 to a charitable cause.

For more information, please contact m.cadek@leedsbeckett.ac.uk from Leeds Beckett University.

2.4.8.4 Newsletter Lewisham

Parent's feedback for National Child Measurement Programme (NCMP) results letters

As part of the NCMP, children are weighed and measured at school. The programme delivers world class data and information is used by the NHS to plan and provide an improved health services for children. After the measurement, results letters are sent to parents of year six and reception year pupils.

Lewisham Borough is working with Leeds Beckett University to review the NCMP results letters. We have prepared two versions of the NCMP results letters that are randomly delivered to parents based on their pupil's school. All letters have a link to an online survey attached at the end requesting feedback on the format of these letters.

We ask all school's head teachers to encourage parents (e.g. using parent emails, or direct contact) to complete a 5-minute survey to provide feedback on the measurements results letters. Parents can find a link to the survey at the end of their measurements results letter. Feedback from this survey will provide essential information for the future delivery of the NCMP in Lewisham. As an incentive, all parents who provide feedback will have an opportunity to win one of four £35 vouchers for an online retailer.

For more information regarding the study, please contact m.cadek@leedsbeckett.ac.uk from Leeds Beckett University.

2.4.8.5 Emails National – Schools (Campaign Monitor)

To a representative of **<<INSERT SCHOOL NAME>>,**

We are a team of researchers at Leeds Beckett University reviewing the National Child Measurement Programme (NCMP), and specifically the result letters. This review is part of a national research project that is supported by the NCMP at Public Health England.

We are currently in the process of engaging with parents to ask them for their opinion regarding the NCMP results letters. We are contacting you to see if you would be willing to help us reach parents at your school via parent mail and the template message provided in this email (please feel free to modify the template).

The NCMP is distributed to thousands of primary schools in England each year and it is crucial that we know the opinion of as many parents as possible to understand how we can further improve the NCMP result letters and the information provided to families.

If you have any questions, please contact Martin Čadek at Number or M.Cadek@leedsbeckett.ac.uk who can provide you with further information.

Thank you for reading this email. We appreciate any help you can offer.

Kind regards,

Martin Čadek, PhD Student

Dr Stuart Flint, Senior Research Fellow

Professor Ralph Tench, Director of Research

Template for parents

<<INSERT SCHOOL NAME>> has been emailed by the researchers from Leeds Beckett University who wish to contact parents and carers of Year 6 and Reception year pupils regarding their opinion of the National Child Measurement Programme letters. Your feedback will provide essential information for the future delivery of the NCMP letters.

If you wish to provide the feedback, please use the link below. The survey takes up to 5-minutes to complete.

https://ncmp.me/survey

For every parent or carer who provided feedback, the researchers will donate £1 to a charitable cause.

For more information, please contact m.cadek@leedsbeckett.ac.uk from Leeds Beckett University.

2.4.8.6 Social Media National

LONG VERSION

Admin delete if not allowed

Dear parents,

We are a team of researchers at Leeds Beckett University reviewing the National Child Measurement Programme (NCMP), and specifically the results letters.

As part of the National Child Measurement Programme (NCMP), most children in the Reception year and Year 6 were weighed and measured at schools.

We are currently looking for parents or carers with children in Reception and Year Six who participated in the NCMP in academic year 2018/2019. If you are such parent, we'd like to hear your opinion about the letter you have received. Any information you will provide to us will be kept completely anonymous and we will not share your personal details such as name or contact details with anyone.

Your feedback will provide essential information for the future delivery of the NCMP in England. To provide the feedback, please click on the link below:

https://ncmp.me/survey

For every parent or carer who provide feedback we'll donate 1£ to a charitable cause until total of 200£ is reached. The survey takes up to 5-minutes to complete.

Please feel free to contact me at M.Cadek@leedsbeckett.ac.uk or simply comment below.

Thank you for reading this post 🙂

SNIPPET VERSION

Do you have a child aged 4-5 or 10-11 who was weighted at school by the NCMP this year? Did you receive NCMP letter with their results?

If yes, please share your opinion about the NCMP letter you have received by completing short survey: https://ncmp.me/survey

@leedsbeckett

2.4.9 Freedom of Information Request for School Emails

Dear Mr Cadek

Thank you for your request for information received on 11 March 2019. You requested:

"I am writing to you under the Freedom of Information Act 2000 to request the following information. Can you please send me a list of all Primary and Secondary schools in England with the Addresses, Contact telephone numbers, Name of head teacher and an Email address for each head teacher?"

We have dealt with your request under the Freedom of Information Act 2000.

A csv file containing data from the Get Information about Schools (GIAS) website as at 19 March2019 is enclosed. The file contains a standard extract of all educational establishments

in England. Primary and secondary schools can be identified in the field titled “Phase of Education”

We are withholding the email address of the head teacher under section 40(2) (personal data), this is because the information in question includes 3rd party personal data. Personal data is that which relates to a living individual who can be identified from that data, or from that data and other information which is likely to be in, or to come into, the possession of the requestor. Disclosure of this information would contravene a number of the data protection principles in the Data Protection Act 1998, and would be regarded as ‘unfair’. By that, we mean the likely expectations of the data subject that his or her information would not be disclosed to others and the effect which disclosure would have on the data subject. Section 40(2) is an absolute exemption and is not subject to the public interest test.

We have supplied you with the school email address where available.

Further information on the terms used within this extract can be found in the GIAS glossary: www.get-information-schools.service.gov.uk/glossary

If you have any queries about this letter please contact me. Please remember to quote the reference number above in any future communications.

If you are unhappy with the way your request has been handled, you should make a complaint to the Department by writing to me within two calendar months of the date of this letter. Your complaint will be considered by an independent review panel, who were not involved in the original consideration of your request.

If you are not content with the outcome of your complaint to the Department, you may then contact the Information Commissioner’s Office.

Your correspondence has been allocated reference number 2019-0010289. If you need to respond to us, please visit: https://www.education.gov.uk/contactus and quote your reference number.

Yours sincerely

Name

Web: https://www.education.gov.uk

Twitter: https://www.twitter.com/educationgovuk

Facebook: https://www.facebook.com/educationgovuk

2.5 Study 3 – Materials

2.5.1 Recruitment

2.5.1.1 Email to Parents

Dear Parent,

When you contacted OneLife Suffolk, you indicated that you are okay with your data being shared with Leeds Beckett University for research purposes. I am contacting you today to see if you are interested in contributing to follow-up research.

I am a PhD student at Leeds Beckett University and I am exploring parental opinions about the National Child Measurement Programme (NCMP) letters. You probably received one of these letters with results about your child's weight and height.

I would like to ask if you would be interested in participating in a brief phone (or Skype) interview. During the interview, we would discuss your opinions and experience with the NCMP letter that you have received from your council. The interview would be structured and last between 20 – 30 minutes.

To schedule the interview, please use the following link – https://calendly.com/m-cadek/interview or email me a few dates and times when you are available.

Once you have scheduled an interview, please complete the following consent form – https://leedsbeckettsport.eu.qualtrics.com/jfe/form/SV_5iPewBaht6Sk0gR before the interview.

For further information about the interview, please read the attached information sheet.

Please let me know your answer,

Thank you,

Kind regards,

Martin Čadek | PhD Student

School of Sport | Leeds Beckett University

2.5.1.2 Social Media

Dear parents,

We are a team of researchers at Leeds Beckett University working with Suffolk Council's Public Health team to review the National Child Measurement Programme (NCMP), and specifically the results letters.

The National Child Measurement Programme is a scheme that sees children in Reception and Year Six weighed and measured at school. Six weeks after the measurement, carefully worded letters containing results of measurement are sent home to parents.

We are currently looking for parents with children in Reception and Year Six who participated in the NCMP in academic year 2018/2019 and reside in Suffolk County. If you are such parent, we'd like to hear your opinion about the letter you have received. Any information you will provide to us will be kept completely anonymous and we will not share your personal details such as name or contact details with anyone.

Your opinion will be valuable feedback that will be used by Suffolk County Council to improve the way NCMP works.

Please feel free to contact Martin Čadek at Number or M.Cadek@leedsbeckett.ac.uk who can provide you with further information.

Thank you for reading this post.

2.5.1.3 Web Forums

Dear [Forum name, e.g. Mumsnet],

We are a team of researchers at Leeds Beckett University working with Suffolk Council's Public Health team to review the National Child Measurement Programme (NCMP), and specifically the results letters. This review is part of a research project that is supported by the NCMP at Public Health England.

Through the project we have prepared new versions of the NCMP results letters. These are the letters that have been sent to parents across Suffolk County to provide advice and support for children and their families. The new versions of the letter are a result of a collaborative effort whereby we have surveyed 92 Local Authority representatives and discussed the letter(s) with parents, academics, school nurses and other stakeholders.

We are currently in the process of engaging with parents to ask them for their opinion regarding the newly developed NCMP results letters.

We want to ask if you would be willing to help us to reach parents who are members of your community and reside in Suffolk County. We wish to contact those parents and ask them to participate in semi-structured interview regarding their opinions about the NCMP letters.

If you are willing to help us contacting parents at your community, please contact Martin Čadek at Number or M.Cadek@leedsbeckett.ac.uk who can provide you with further information.

2.5.2 Interview Information

Before deciding whether you wish to participate in the interview, please read carefully this information sheet.

How long does the interview take to complete?

- The interview may take up to 30 minutes to complete.

How do I participate?

- You must be aged over 18 years and provide consent after you read this information sheet. To give consent, you will need to sign the consent form you were given.

Who can participate?

- You must be a parent, or a carer aged over 18 years and live in England. You received the NCMP (National Child Measurement Programme) letter about your child.

What happens if I do not want to take part or if I change my mind?

- Participation is voluntary. If you do not want to participate, please let me know using my email or phone number. If you complete the interview and then wish to remove your data, you can do so before the 31st December 2019.

Will the interview be recorded?

- Yes. With your permission, the interview will be recorded, and a transcript will be produced. This is to ensure that no information is lost and will reduce the time needed to take the interview. You will be asked to give both written and verbal consent to be recorded.

What is the aim of the interview?

- The interview will explore your opinions and experience of the NCMP letter that you recently received.

What are the benefits of participating in the interview for me?

- Your feedback may improve the delivery of the NCMP in your area. It may also help to improve user experience regarding the NCMP letters.

Are there any risks of participating in the interview?

- There are no expected risks of participating in the interview. If you have any concerns, please contact Martin Čadek or Nicola Kime (N.Kime@leedsbeckett.ac.uk) who is a Research Ethics Coordinator for the School of Sport at Leeds Beckett University and has provided ethical approval for this study.

Are results of this interview published?

- Once all data are anonymised, the results of this interview will be presented in doctoral dissertation and may be presented in various forms at international conferences, reports, and in journal publications with your permission.

What about my privacy?

- The data you provide will be anonymised and stored in line with Leeds Beckett University's data protection policy and treated according to the Data Protection Act (DPA; 1998), and The General Data Protection Regulation (GDPR; 2016/679). Information such as email or phone number will be stored separately from any demographic data you provide. This means you remain anonymous and your confidentiality is respected at all times. The only person who will have the access to the emails or phone numbers is me, the lead researcher (Martin Čadek). Once the interview is completely transcribed the interview recording will be destroyed.

Can I access the transcript?

- Yes, you have right to read or edit the transcript or to have some comments removed or kept "off the record." Please contact the lead researcher who will provide you with access.

Who has developed the interview?

- My name is Martin Čadek (M.Cadek@leedsbeckett.ac.uk) and I am the lead researcher who developed this interview. I am a PhD student at Leeds Beckett University and your contact. My PhD supervisor is Dr Stuart Flint (S.W.Flint@leedsbeckett.ac.uk) who you may also contact.

Thank you for reading this interview information sheet.

2.5.3 Declaration of informed consent to participate in the interview and demographics

2.5.3.1 Consent

Start of Block: Informed Consent

Q1 Declaration of informed consent to participate in the interview

Q2 I confirm that I have read and understood the interview information, had the opportunity to consider the information, and where necessary, ask questions which have been answered satisfactorily.

o Yes (1)

o No (2)

Q3 I understand that I am under no obligation to take part in the interview and that my participation is voluntary.

o Yes (1)

o No (2)

Q4 I understand that to withdraw my responses after submitting the interview, I can contact Martin Čadek. I can do this up until the 31th December 2019.

o Yes (1)

o No (2)

Q5 I understand that all the information I provide will be treated in the strictest confidence and kept anonymous. I give permission for the researchers at Leeds Beckett University to have access to the information I provide.

o Yes (1)

o No (2)

Q6 I understand that the findings from the interview will be used in the publication of journal articles, reports, conference presentations and as part of a PhD thesis. I understand that I will not be named in any publications. I give my permission for the researchers at Leeds Beckett University to use my data in publications.

o Yes (1)

o No (2)

Q7 I agree to participate in the interview.

o Yes (1)

o No (2)

Q8 I give my permission to record the interview.

o Yes (1)

o No (2)

Q9 Please, complete the information below.

o Full name: (1) _____

o Email: (2) _____

o Current date: (3) _____

End of Block: Informed Consent

2.5.3.2 Demographic Information

Start of Block: Filter question

Q26

Which local government authority area do you wish to represent in this survey? (Please select the best possible option from the list of the 152 Local Authorities below).

If you wish to represent more than one Local Authority, please complete the survey again.

▼ Barking and Dagenham (457) ... York (608)

Q31 What is the name of the school attended by your child, who received the NCMP letter? (e.g.: Otley Primary School)

_____

End of Block: Filter question

Start of Block: Demographic Questions

Q10 Please identify yourself either as a father, mother or someone else taking care of the child who is named in the letter:

o Father (1)

o Mother (2)

o Other carer (e.g. grandparent, brother) (4)

o Refuse to say (5)

Q11 According to the letter, your child's weight status would be considered (Please select the weight status written inside the letter)?

o Underweight (1)

o Healthy weight (2)

o Overweight (3)

o Very overweight (4)

o Not Applicable (5)

o Refuse to say (7)

Q12 Do you have any other children?

o Yes, and they've received the NCMP (1)

o Yes, but they have not received the NCMP (2)

o No (3)

o Refuse to say (4)

Q13 Is your main language English?

o Yes (1)

o No (2)

o Refuse to say (3)

Q14 Which statement best describes your current employment status?

o Working (full-time employee or business owner) (1)

o Working (self-employed) (2)

o Working (part-time) (3)

o Not working (temporary layoff from a job) (4)

o Not working (retired) (5)

o Not working (looking for work) (6)

o Not working (disabled) (7)

o Not working (other) (8)

o Refuse to say (9)

Q15 What is your ethnicity?

o Asian (1)

o Black (2)

o White (3)

o Mixed (4)

o Other (5)

o Refuse to say (9)

Q16 What is the highest qualification you have received?

- o Primary school (1)
- o GCSEs or equivalent (9)
- o A-Levels or equivalent (10)
- o University undergraduate programme (11)
- o University post-graduate programme (12)
- o Doctoral degree (13)
- o Refuse to say (14)

Q17 Please select the weight status you consider yourself to be?

- o Healthy Weight (1)
- o Underweight (2)
- o Overweight (3)
- o Very overweight (4)
- o Refuse to say (5)

Q28 Please provide the first part of your postcode (e.g. 'YO5' 7AA).

_____

End of Block: Demographic Questions

2.5.4 Interview Questions

1) Have you received the NCMP results (parental) letter with your child's results? When? Did you read it?

2) Regarding the original letter you have received after you've taken it out of the envelope. Did you read every detail very carefully or did you skim most ofthe letter? How did you read the letter?

3) Did you focus on anything specific? What did you focus on? Something that you felt is very important and that you need to know.

4) After you've read it. Did you keep the letter or throw it away or something else? What did you do with it? Why?

5) Did you take any actions because of the letter? What did you do? Why?

6) How would you describe the letter sample A in one or two words? Academic correspondence? Technical correspondence? Personal correspondence? Junk letter? Government letter? Anything else?

7) Please can you describe the tone of the letter sample A? How did it make you feel? Was there something unpleasant or pleasant?

8) Do you find the language in the letter sample A discouraging or encouraging? Is it motivating or not?

9) Are there any sentences you like or dislike?

10) Are there any words you like or dislike?

11) How would you describe the letter sample B in one or two words? Would the description be different in comparison to the letter sample A? Academic correspondence? Technical correspondence? Personal correspondence? Junk letter? Government letter? Anything else?

12) Is the tone of the letter sample B same or different to the letter sample A? How did it make you feel? Was there something unpleasant or pleasant?

13) Do you find the language in the letter sample B discouraging or encouraging in comparison to the letter sample A? Is it motivating or not?

14) In the letter sample B, are there any sentences you like or dislike?

15) In the letter sample B, are there any words you like or dislike?

16) Is the letter sample B an improvement in comparison to the letter sample A, is it the same, worse? In what way? Let participant talk here as this is an important aspect of evaluation.

17) Is there anything you would remove or add regarding both letters? Why?

18) Have you shared the results in the original letter with your child? Why yes, why not?

19) Do you think one version is easier to discuss with your child than the other version? Which? Why yes/no?

2.5.5 Interview Protocol

Structured Interview

There are 17 questions and a demographic questionnaire with 10 questions that are only provided to some parents after the interview (*see below for further details*).

AIMS

The semi-structured interview has several aims.

- Identify parental preference regarding the key linguistic features of both letters.
- Provide an evaluation of the modified letter by letting parents directly compare both versions.
- Understand what parents do with the letters and if they share the results with children.

WELCOME & KEY INFORMATION

In this stage, I am preparing a participant for the interview and ensuring they have all information about the research. Every participant will be asked the same questions and I will not facilitate additional responses regarding further topics.

Hello, thank you for taking the time to participate in the interview...

I. Introducing researcher – Martin, PhD researcher, My research – the NCMP.
II. *Before we'll start the interview. There is a couple of things I'd like to mention to ensure you have all the information to participate in the interview...*
III. Introducing topic – The NCMP results letters; Inform what letters are.
IV. Aims (see above) – Language used in the letters, your opinion about it. Semi-structured interview.
V. Reviewing consent to be recorded and interviewed, providing recorded consent verbally, an option for the participant to ask any questions related to the research.
VI. Informing participants of their right to stop the interview and withdraw from it but no later than the 31st of December 2019.
VII. Informing that debrief document will be sent right after this interview.
VIII. Ensuring participants that they are aware there are no right or wrong answers, the interview is recorded, they remain anonymous, and offer them to use the first name.

Are you ready? Let me set up the recording. Done. Can you please tell me if you agree to participate in the interview? Do you agree for this interview to be recorded?

Figure 42: Study 3 Interview Protocol (1)

BASIC INFORMATION

The theme serves the purpose of ensuring that all inclusion criteria are met.

1. ☐**Q:** Have you received the NCMP results (parental) letter with your child's results? When? Did you read it?

FIRST WE'LL DISCUSS THE ORIGINAL LETTER.

PARENT'S ACTIONS TOWARDS THE LETTER

Theme briefly explores parent's immediate actions regarding the letter. We wish to explore if they have read the letter, kept it, threw it away.

2. ☐**Q:** Regarding the original letter you have received after you've taken it out of the envelope. Did you read every detail very carefully or did you skim most of the letter? How did you read the letter?
3. ☐**Q:** Did you focus on anything specific? What did you focus on? Something that you felt is very important and that you need to know.
4. ☐**Q:** After you've read it. Did you keep the letter or throw it away or something else? What did you do with it? Why?
5. ☐**Q:** Did you take any actions because of the letter? What did you do? Why?

(EMAIL BEFOREHAND)
PLEASE OPEN OR PUT IN FRON OF YOU THE LETTER LABELLED AS SAMPLE A. ASK THEM TO CONFIRM THEY HAVE IT.

LANGUAGE OF THE LETTER

This theme focuses solely on language in the letter and how this impacts parents, literally what impression it leaves.

6. ☐**Q:** How would you describe the letter sample A in one or two words? Academic correspondence? Technical correspondence? Personal correspondence? Junk letter? Government letter? Anything else?
7. ☐**Q:** Please can you describe the tone of the letter sample A? How did it make you feel? Was there something unpleasant or pleasant?
8. ☐**Q:** Do you find the language in the letter sample A discouraging or encouraging? Is it motivating or not?
9. ☐**Q:** Are there any sentences you like or dislike?
10. ☐**Q:** Are there any words you like or dislike?

Figure 43: Study 3 Interview Protocol (2)

EVALUATING LETTERS AND THEIR LANGUAGE

IN THIS SECTION, THE PARTICIPANT SHOULD REVIEW THE LETTER SAMPLE B. PLEASE OPEN OR PUT IN FRON OF YOU THE LETTER LABELLED AS SAMPLE B. ASK THEM TO CONFIRM THEY HAVE IT.

The focus is on the language used in both letters and what this language causes (if anything at all). Four questions are from the previous section with one additional question probing the participant to discuss differences between the letters.

11. ☐**Q:** How would you describe the letter sample B in one or two words? Would the description be different in comparison to the letter sample A? Academic correspondence? Technical correspondence? Personal correspondence? Junk letter? Government letter? Anything else?
12. ☐**Q:** Is the tone of the letter sample B same or different to the letter sample A? How did it make you feel? Was there something unpleasant or pleasant?
13. ☐**Q:** Do you find the language in the letter sample B discouraging or encouraging in comparison to the letter sample A? Is it motivating or not?
14. ☐**Q:** In the letter sample B, are there any sentences you like or dislike?
15. ☐**Q:** In the letter sample B, are there any words you like or dislike?
16. ☐**Q:** Is the letter sample B an improvement in comparison to the letter sample A, is it the same, worse? In what way? Let participant talk here as this is an important aspect of evaluation.
17. ☐**Q:** Is there anything you would remove or add regarding both letters? Why?

Figure 44: Study 3 Interview Protocol (3)

SHARING RESULTS

This theme focuses on the possibility of sharing the results with their child, rather than whether they shared it or not. It's important to explore if the writing style of the letter even allow this (i.e., non-technical, easy to rephrase to a child).

18. ☐**Q:** Have you shared the results in the original letter with your child? Why yes, why not?
19. ☐**Q:** Do you think one version is easier to discuss with your child than the other version? Which? Why yes/no?

CLOSING REMARKS AND DEBRIEF

As part of the closing remarks, participants are fully debriefed – the debrief document is sent via an email and they have an opportunity to ask questions. Participants who were recruited outside of Study 2 will be sent the questionnaire below.

Figure 45: Study 3 Interview Protocol (4)

2.5.6 Interview Debrief

You have just completed an interview exploring your opinions and user experience about the National Child Measurement Programme (NCMP) you have received.

The letter that you've reviewed are similar to the versions that were sent to parents or carers in your area this year. The researcher has asked you about your experience of receiving the NCMP letter and during the interview you were presented with an alternative version of the letter and were asked to compare both letters.

Participation in the interview should not pose any serious risks or cause any harm. However, you could have experienced something that has decreased your comfort. If this is the case, please contact either of us using the details below.

If you wish to withdraw your answers, you can do so any time prior to 31st of December 2019.

If you have any questions about your participation or the findings of this study, please do not hesitate to contact the principal investigator Martin Čadek (at M.Cadek@leedsbeckett.ac.uk or Number), or director of studies Dr Stuart W. Flint (at S.W.Flint@leedsbeckett.ac.uk or Number). We are happy to receive any questions about the interview or provide further information where necessary.

We would like to take this opportunity to thank you again for your participation.

2.6 Codebook – Study 1 – Letters analysis

Name	Description	Files	References
Moves	Moves are functional categories that have been coded at the linguistic unit of paragraphs or sentences and aim to deliver the communicative purpose of "sharing the results about the child's weight in the most appropriate fashion". Most moves also have a strategy used to utilise the move in the letter.	300	3767
01 Opening phrases	This move contains units typically occurring at the beginning of the letter. These are used to open the letter, address the reader, frame the topic of the letter, and prepare the reader for the results. The move rarely co-occurs with other moves.	300	576
01.1 Acknowledging participation	*This strategy may occur at the beginning and fulfil move 01 by thanking parents for participating in the NCMP initiative.* *(E.g., * "**Thank you for taking part in** the National Child Measurement Programme.")*	5	5
01.2 Future in the past	*This strategy refers to the pre-measurement letter (in the past) with opt-out information, but the reader is also being prepared for "bad" news, and the writer implies that the reader "should have been"(a possibility to write again was mentioned) aware of this.* *(E.g., "**We let you know** that **we would** contact you **if your child's measurements were significantly** above or significantly below the healthy height and weight range for children of the same age.")*	9	9
01.3 Rationalizing the letter and the NCMP	*This strategy presents the reader with reasons describing why is the NCMP conducted, but it does not need to mention the programme directly. It may mention only some elements of it. The strategy is "defensive", and the writer states how the programme helps something and allows something.*	237	268

Name	Description	Files	References
	*(E.g., "**Having an understanding** on where your child's weight sits within the healthy range for their age, sex and height **can help you** make informed choices about their lifestyle.")*		
01.4 Reference the measurement and the letters	*This strategy opens the letter with a recall for the reader about the measurement or pre-measurement letters.* *(E.g., "We **recently sent you a letter about measuring your child's** height and weight in school as part of the National Child Measurement Programme.")*	275	275
01.5 Reference the measurement only	*The strategy provides a plain statement that the measurements have been done and does not refer to any previous communication.* *(E.g., "As part of the National Child Measurement Programme, **we recently measured** your child's height and weight in school.")*	4	4
01.6 Underline past consent to the measurement	*The strategy refers to the opt-out option for parents. The opt-in is the default; therefore, they have given the consent if the reader did not reply. The strategy builds on the consent given.* *(E.g., "**You have asked fo**r your child's **measurement results** to be sent to you.")*	15	15
02 Sharing results	This move contains units approximately in the middle of the letter. This is an almost exclusive position for this move. The move delivers the result to parents. Typically, the Move does not co-occur with other moves, and the Move 01 precedes it. The move combines graphical elements with text to share the result.	297	902
02.1 Acknowledging limitations of the feedback	*The strategy introduces uncertainty into the results and their interpretation. This might be because readers are aware that these measurements are not perfect, do not reflect individual children. This strategy is usually "hidden" in a footnote.*	199	209

Name	Description	Files	References
	*(E.g., "**Some medical conditions** or treatment that your child is receiving **may mean** that the **BMI centile is not the best way** to measure your child. Your GP or other health professional caring for your child will be able to discuss this with you.")*		
02.2 Concealed condition	*The strategy, to some extent, rationalises the measurement and allows putting more weight on the usefulness of the measurement by suggesting that it is difficult to tell by eye if the child is not in the healthy weight category.* *(E.g., "It **can** sometimes **be difficult to tell if** your **child is overweight** as they may look similar to other children of their age.")*	19	20
02.3 Good news healthy weight framing	*The strategy informs the reader that their results are "good news" and that they should maintain the result. The purpose is possibly to reaffirm the results and share something positive.* *(E.g., "This is **good news**. It is important that «FirstName» **maintains** a healthy weight throughout childhood and into adulthood.")*	5	5
02.4 Providing visuals guides graphs	*The strategy serves the communicative purpose by sharing visuals, graphics, small pictures in the body of the letter to facilitate understanding of the results.* *(No text example available.)*	41	48
02.5 Sharing with children	*The strategy informs the reader about the potential situation of sharing any part of the results with their child. It also may involve the topic of weight talk.* *(E.g., "We only advise you **share these results** if you feel that it would be helpful. Advice on **talking to your child about their weight** can be found at: URL.")*	53	56

Name	Description	Files	References
02.6 Table Alternative	*This strategy delivers the results by sharing the modified table that is not re-using either table from the specimen letter version developed by PHE in 2014 – 2017 or the ongoing version since 2018.* *(No text example available.)*	86	86
02.7 Table Specimen 2014 17	*This strategy delivers the results by sharing the table that is re-used from the Specimen letter version developed by PHE in 2014 – 2017. or 2018 – ongoing version.* *(No text example available.)*	182	182
02.8 Table Specimen 2018	*This strategy delivers the results by sharing the table that is re-used from the ongoing version of the Specimen letter developed by PHE in 2018.* *(No text example available.)*	20	20
02.9 Written results statement	*This strategy reiterates and repeats what is available in the table in written form. The sentence appears to be more of a statement than an interpretation of the table.* *(E.g., "**These results suggest** that your child is «**ClinicalBMICategory**» for their age, sex and height.")*	275	276
03 Educating and informing audience	This move contains units approximately in the middle of the letter but can occur at other places where further explanation is warranted. The move usually closely follows up the Move 02 and co-occurs with Move 04. The move aims to associate the result with consequences and educate the reader.	299	698
03.1 Comparing children	*The strategy is interpreting results by comparing the reader's child with other children. The purpose seems to be to educate the reader by giving them the interpretation of where their child is and what it may imply.*	18	18

Name	Description	Files	References
	*(E.g., "This is **the range where the majority of children** will be in their growth and is associated with lower health risks in general.")*		
03.2 Compute the BMI yourself	*This strategy is a suggestion to compute and recheck the BMI by visiting the NHS link. This leads the reader to additional resources and further information.* *(E.g., "You can **find out how your child's result** was calculated, and **check how they** are growing over time, by going to **www.nhs.uk/bmi**.")*	258	260
03.3 Context of environment	*This strategy accounts for the environment while educating parents about diet and physical activity. It allows contextualising the results beyond the medical context.* *(E.g., "We know **that it can be difficult in these modern times** to eat a **nutritious diet** and get enough physical activity, but it is important to take steps to try to stay healthy.")*	7	7
03.4 Context of health	*This strategy educates the reader by informing them about either positive or negative impact of weight on their child's health. It provides the medical context and interpretation of the results provided to the reader.* *(E.g., "Being overweight can cause **diseases** like **cancer**, **type 2 diabetes**, **heart disease** and some of these can begin in childhood." OR "Children of a healthy weight are more likely to grow into **healthy adults**. To keep **growing healthily**, it is important that your child eats well and is active.")*	238	316
03.5 Context of stigma	*This strategy provides the context of weight stigma while reading the letters and further educates the reader about the potential impact of the stigma on their child.* *(E.g., "**Children are vulnerable to stigma** around weight and body image so parents/carers may decide not to discuss these results with them.")*	5	5

Name	Description	Files	References
03.6 Explaining measurement method	*This strategy explains to the reader measurement methods or some other part of the measurements conducted on their children. It does so in limited space and may simply be a reiteration of the terminology and used methods.* *(E.g., "**The BMI centile** for children is **used by all healthcare professionals** and, because **it relies on more than appearance**, is the best way to see if a child is a healthy weight.")*	66	92
04 Appeal to action or change	This move contains units approximately in the middle of the letter but usually follows up the Move 02 and shares the position with Move 03 as these two moves can co-occur in the same place as the letter. The move aims to appeal to the reader and either suggests or demands some form of action.	296	1090
04.1 Change is simple argument	*The strategy appeals the reader to action by claiming that the changes which can be implemented are simple, small, doable.* *(E.g., "**Small changes can make a big difference** in helping them to achieve a healthy weight as they grow and reduce their chances of developing, high blood pressure and type 2 diabetes when they are older.")*	125	137
04.2 Give us feedback	*The reader is asked to provide some form of feedback about the letters, services, or the NCMP to the LGA as part of this strategy.* *(E.g., "We believe that **patient's feedback** – good or bad – is essential to improving services. To **give feedback** on **your experience** of our service please visit URL.")*	16	16
04.3 Instructions as directives and obligations	*This strategy encourages, stimulates action from the reader, provides some short rationale for the action, or otherwise urges (We recommend; It is important.) the reader to follow instructions directly.*	157	245

Name	Description	Files	References
	*(E.g., "**To ensure your child stays a healthy weight** as they grow **we encourage** families to eat a healthy, varied and balanced diet and support their child to be active for at least an hour each day.")*		
04.4 Instructions as suggestions and possibilities	*This strategy uses an indirect way, and rather than demanding some action, it suggests it or offers it as a possibility (Can). The instructions may be followed, and the reader is offered a conditional (If) to trigger the action.* *(E.g., "**If you did not know** your child was underweight **and are concerned** you might want to speak to your GP.")*	280	497
04.5 Opted in by default	*This strategy does the appeal by an opt-in method of the reader to some form of service or programme. It can also occur as a statement that the information has been shared automatically with a service, team, and such.* *(E.g., "The NAME School Nursing team will be in contact with you to discuss further support available.")*	52	53
04.6 Peer pressure	*To facilitate action, the strategy uses peer pressure and shows that the behaviour is done by others, is normal, or frequent.* *(E.g., "**Many parents** have found the tips at www.nhs.uk/change4life useful in helping them make changes to help their child grow healthily.")*	21	22
04.7 Referring service	*The strategy refers to service as the action that the reader should do. The strategy offers emails, numbers, and URLs to mitigate the response and facilitate the action.* *(E.g., "Local **support and information is available** through the Healthy Lifestyle Service. To find out more **please call** NUMBER or EMAIL.")*	102	120

Name	Description	Files	References
05 Ensuring privacy	This move usually occurs near the end of the letter and aims to assert that the reader can rest assured that all information in the letter is confidential. The move can occasionally co-occur with Move 02. *(E.g., "**The information we collect is treated confidentially**. It has **not been shared** with your child or any member of school staff.")*	263	278
06 Conclude with pleasantries	This move is typically the last but can co-occur with Move 04. Usually, the move expresses leave-taking and thanks to the reader. *(E.g., "**Thank you** for reading this letter - we hope this information is **useful to you**.")*	223	223
Structural	Structural elements are components of letters that do not deliver the communicative purpose directly. They are usually aesthetic parts of the letters, but they may serve a persuasive function. Examples can be a salutation, a signature, or information about the address. These components do not have any strategies and occur outside the body of the letter (in footers, headers, or similar areas). No further description is provided, only examples.	300	2633
01 Logo	This element refers to any trademark, logo, or visual design of LGA or commissioned provider. *"No text example available."*	263	344
02 Title	In rare cases, few letters had what could be described as a title that stated what was being delivered. *E.g., "Helping all children to eat well, move more and live longer: The National Child Measurement Programme"*	32	33
03 Private confidential statement	All letters had a simple statement "Private and confidential", usually written in the header.	260	262

Name	Description	Files	References
	E.g., "Private and confidential"		
04 Sender	The sender was an area in the header that included details regarding who was sending the letter. *E.g., "The Children & Families Clinic X-Block Name General Hospital Name XXX 3XX"*	275	371
05 Addressee	The addressee was usually in the opposite area to the sender in the letter's header and provided information about to whom the letter is addressed. *E.g., "Parent/Carer of «Firstname» «LastName» «Address1» «Address2»"*	261	278
06 Date	Some letters also included the date the letter was printed. *E.g., "10 August 2018"*	259	268
07 NHS number	Some letters also included NHS number of children either in the body or header of the letter. *E.g., "NHS Number: «NHSnumber»"*	169	170
08 School reference	This number likely referred to a school attended by a pupil; however, it was rarely present in the letter. *E.g., "Our Ref: «School URN»"*	27	27
09 Salutation start	This was a phrase placed before the key message in the letter. It was the greetings phrase directed to a parent. *E.g., "Dear Parent/Carer,"*	300	300
10 Salutation end	The end of the letter was concluded with some conventional closing phrases that closed the letter message. Any following parts were signatures, logos, footnotes, or some form of attachment.	287	289

Name	Description	Files	References
	E.g., "Yours sincerely,"		
11 Signature sender	This was either the organisation or a signature provided by sending organisation. Usually, this was someone such as a public health director. *E.g., "Director of Public Health"*	282	285
12 Structural DOB	Structural DOB was a rare element that captured the date of birth outside the result section. *E.g., "Date of Birth «DateOfBirth»"*	4	6

** Please note that the examples provided in parentheses are not aiming to be exhaustive or the most representative cases. They are provided to illustrate how the code has been used. The code variety is described extensively in the results.*

2.7 Codebook – Study 3 – Interviews analysis

Name	Description	Files	References
Questions	The following Theme 01 links to questions 1 to 5.		
01 Moment of receiving the result letter	The codes in the first theme cover "the moment" when parents received their child's letter with weight and height results (the original letter sent by their LGA). Across the codes, parents are sharing their reactions to receiving the letter, strategies taken to read the letter, and actions taken after reading the letter.	20	135
01.1 Taking actions because of the letter	This code is limited to behaviours prompted by the letter parents have received. These are any actions caused by the letter and reflected by parents.	20	25

Name	Description	Files	References
	(Healthy, e.g., "So my daughter, she was of average height and average weight for her age so I felt that I didn't need to do anything."; Other weight, e.g., "I did actually book her on to the One Life Suffolk Programme, the holiday club which she went to with her sister over Easter I think it was.")*		
01.2 A centre of focus for parents	This code describes parts of the letter that were important to parents. They have paid considerable attention to them, often before reviewing the rest of the letter. *(Healthy weight, e.g., "Well I suppose the box helped draw to the weight and height and I think the [core] didn't have anything of concern, I just kind of read the rest quickly.", Other weight, e.g., "The word overweight.")*	20	20
01.3 Reflecting the child's lifestyle and weight history	This code was used for segments where parents started describing their past experiences and reflections related to the topic of weight in their family. Parents often also provided a rationalisation for their actions. Typically, the code occurred without further facilitation from the interviewer, "off the track" from the interview. *(Other weight, e.g., "We signed him in and he just refused to go. That took some time actually, the first time we tried to do that we didn't get a place in one of their courses then it was quite difficult to contact this team.")*	6	15
01.4 Discard or keep the letter	This code refers to segments where parents describe what they did with the letter itself once they have read it. *(Healthy weight, e.g., "I suspect I might have kept it in a cupboard but I've not looked in the cupboard to check if it was there.")*	19	20

Name	Description	Files	References
01.5 Experiencing the bad letter	The “bad” letter is any which does not deliver the news that the parent’s child is in a “healthy” weight range. The code features segments describing overall parental experiences with such letters. *(Other weight, e.g., “Because when you open the initial letter which is the one that I got your first reaction is of horror, first of all, that someone is saying that your child is very overweight and giving you a list of illnesses that they can get.”)*	13	22
01.6 Experiencing the good letter	The “good” letter is any which does deliver the news that the parent’s child is in a “healthy” weight range. The code features segments describing overall parental experiences with such letters. *(Healthy weight, e.g., “No not really, he passed everything and everything was fine so I took it as a good thing that he was growing as expected for a child of his age.”)*	7	14
01.7 Strategies of reading the letter	The code describes segments where parents reflect on “how” they read the letter and accessed the results. *(Healthy weight, e.g., “So I just skim read through the letter. I just concentrated on the part where it told me my child’s height and their weight, and what they thought that was, so she was average.”)*	19	19
Questions	Themes 02 to 05 link to questions 6 to 10 and 11 to 17 (Sample A was introduced in question 6 while Sample B was introduced in question 11).		
02 Experience with the experimental letter	The second theme describes how parents experienced the experimental (created by the principal investigator) letter. The	20	124

Name	Description	Files	References
	experience is described across codes exploring parents' feelings, opinions, and impressions about the experimental letter and whether the letter feels encouraging.		
02.1 Feelings about the letter tone	The code relates to segments where parents described their emotions about the tone of the experimental letter. *(Healthy weight, e.g., "It's a good letter. It's inclusive, helpful, supportive.", Other weight, e.g., "It's the same tone. It's professional. You can see they're trying to be helpful.")*	18	18
02.2 Describing the negative sentiment	The code contains segments about the language of the experimental letters that parents viewed negatively and unfavourably. *(Healthy weight, e.g., "I personally, I don't particularly [like] yours sincerely. I think it's very formal…", Other weight, e.g., "I don't like the if you would like to find out more about how your child's weight is compared to other children phrase, I don't like that.")*	12	18
02.3 Describing the positive sentiment	The code contains segments about the language of the experimental letters that parents viewed positively and favourably. *(Healthy weight, e.g., "I think I liked the bit where it says you can find out more so obviously if I did have an issue it would give me a link to some websites there.", Other weight, e.g., "I prefer that you haven't used the word overweight. That's about all.")*	19	42
02.4 Overall impressions (Describing the letter)	The code contains segments where parents share their overall opinion and description of the experimental letter. *(Healthy weight, e.g., "Yeah, more formal, more technical. I think. Yeah.", Other weight, e.g., "There's a lot of writing but again your*	20	26

Name	Description	Files	References
	eye is directly attracted to the block with the height and weight in, it stands out definitely.")		
02.5 Potential to motivate	The code contains segments where parents discuss how encouraging or discouraging the experimental letter appears to be. *(Healthy weight, e.g., "I think it's pretty matter of fact and it's just saying it as it is.", Other weight, e.g., "More encouraging I would say, it's softer.")*	20	20
03 Experience with the standard letter	The third theme describes how parents experienced the standard (issued by LGA) letter. The experience is described across codes exploring parents' feelings, opinions, and impressions about the standard letter and whether the letter feels encouraging. The codes are intentionally kept the same in Themes 02 and 03.	20	127
03.1 Feelings about the letter tone	The code relates to segments where parents described their emotions about the tone of the standard letter. *(Healthy weight, e.g., "It's a bit lighter and it's more, I guess it's more engaging. It's not as matter of fact.", Other weight, e.g., "It's not pleasant. I don't find it helpful at all. It's not pleasant. I just think directly you read your child is overweight.")*	20	24
03.2 Describing the negative sentiment	The code contains segments about the language of the standard letters that parents viewed negatively and unfavourably. *(Healthy weight, e.g., "You haven't told me what the free support you offer is so I'm not really sure. I don't really want to call either. I hate having to call people.", Other weight, e.g., "I would say it's, the way it's written makes you feel like you want to feel bad about what you're being told.")*	12	27

Name	Description	Files	References
03.3 Describing the positive sentiment	The code contains segments about the language of the standard letters that parents viewed positively and favourably. *(Healthy weight, e.g., "I think it's all good. It just feels like an informative professional sensible letter, yeah, just delivering results of research basically and tests.", Other weight, e.g., "How many ways are you changing, I think the Change for Life things are quite helpful but that's probably it, yeah.")*	12	29
03.4 Overall impressions (Describing the letter)	The code contains segments where parents share their overall opinion and description of the standard letter. *(Healthy weight, e.g., "It's more positive but not as well designed as in layout.", Other weight, e.g., "It's very word heavy, there's lots of writing, but even though there's a phone number that I can call I don't feel like, unless I've read this letter in detail I don't think I would bother to call that number.")*	20	27
03.5 Potential to motivate	The code contains segments where parents discuss how encouraging or discouraging the standard letter appears to be. *(Healthy weight, e.g., "I think slightly more encouraging, the language, yeah.", Other weight, e.g., "Probably neither. I don't think it's discouraging in terms of taking action but I also think it, I don't think it encourages you necessarily to take action.")*	20	20
04 Changing the experimental letter	The fourth theme describes what parents wish was different in the experimental letter. Each code aims to point at a specific problem that parents identified in the experimental letter and either wished it were removed or changed. This theme and Theme 05 are similar, but parents discussed different problems.	18	72

Name	Description	Files	References
04.1 Do not compare children sentence	The code refers to instances where parents express their concern regarding the sentence about comparing children in the experimental letter. *(Healthy weight, e.g., "Yeah, the comparison is totally. No child should be compared to another child, they are all unique.", Other weight, e.g., "I don't like the if you would like to find out more about how your child's weight is compared to other children phrase, I don't like that.")*	4	11
04.2 Social difficulties sentence	The code refers to instances where parents express their concern regarding the sentence about social difficulties in the experimental letter. *(Other weight, e.g., "I would just remove that … we offer this support because research shows children can experience difficulties because, social difficulties because they're overweight.")*	1	2
04.3 Perceived as judging	The code refers to instances where parents perceived the experimental letter as judgemental. *(Other weight, e.g., "I think this letter seems like a little bit more telling you off. Like this letter is judging me more.")*	1	1
04.4 Perceived as patronising	The code refers to instances where parents perceived the experimental letter as patronising. *(Healthy weight, e.g., "That's a bit, well surely it's up to me to decide what I discuss irrespective of what your letter tells me. If I'm thinking about it more.", Other weight, e.g., "...The "recommend" as I said little patronising, that word. That's it.")*	3	4

Name	Description	Files	References
04.5 Avoid reliance on BMI	The code refers to instances where parents criticised the reliance on Body Mass Index in the experimental letter. *(Healthy weight, e.g., "… I believe that BMI only goes once you're an adult rather than as a child. I think that can change completely, you know, from being a child to an adult size.")*	1	1
04.6 Avoid using black & white	The code refers to instances where parents would prefer the experimental letter to be printed in colours. *(Other weight, e.g., "So like put it on a coloured background or something that makes you aware, so it's drawing your eye line to that specific information of that, that's the information you've giving.")*	2	2
04.7 Improve the layout of results	The code refers to instances where parents perceived the design or layout of the experimental letter as distracting. *(Healthy weight, e.g., "I would say sample B, I like how the little chart at the top is laid out. I found that much simpler to read than the one that I received which is pretty similar to sample A.", Other weight, e.g., "Yeah, I would look at reducing that and I would actually, for both of them, I would remove the height and weight blocks and put them right at the end.")*	9	18
04.8 Increase fonts	The code refers to instances where parents expressed that the fonts in the experimental letter are too small. *(Other weight, e.g., "The font on it could be a bit bigger.")*	1	1
04.9 Keep it possible but not necessary	The code refers to instances where parents felt that the experimental letter was too forceful.	1	3

Name	Description	Files	References
	(Other weight, e.g., "… I think having a possibility of talking to school nurse is helpful and if it could be reworded saying that "The school nurse would love to speak to us..." or anything like that, you know making her/him available, that could make the letter better.")		
04.10 Make it less formal	The code refers to instances where parents perceived the experimental letter as too formal. *(Healthy weight, e.g., "So I think kind regards or many thanks, that kind of comes across a little bit more friendly sometimes doesn't it than yours sincerely which is quite official but I appreciate it is from, you know, is it the Government I suppose send them so they probably have to be don't they?")*	3	4
04.11 Make it more positive	The code refers to instances where parents perceived the experimental letter as pessimistic. *(Healthy weight, e.g., "I mean there could be … there results suggest that Ian's weight is at the expected level for their age, I mean that could be followed up with this is positive, this is a positive, I don't know, some sort of praise if it's good could be inputted there…", Other weight, e.g., "Yeah, I think the language is more positive. It's making suggestions, it's not telling you that a Nurse might phone you up. [Refers to the standard letter]")*	4	7
04.12 Make it more straightforward	The code refers to instances where parents thought that the experimental letter was explaining the result in too much detail. *(Healthy weight, e.g., "… and, I think the[y] should just say if you are concerned about the results of these letters please get in touch with us by phone, I think that should be all that's it")*	3	4

Name	Description	Files	References
04.13 Make it personalised	The code refers to instances where parents perceived the experimental letter as lacking individual information regarding their children. *(Healthy weight, e.g., "The last sentence it says you do not have to discuss these results with Ian if you do not wish to so I just, you wouldn't, I don't, I think that's odd. You wouldn't discuss the letter with a five year old.")*	2	3
04.14 Make it shorter	The code refers to instances where parents perceived the experimental letter as too verbose. *(Other weight, e.g., "It's not as easy to read. It looks a lot more writing so it looks a lot more, it just looks too many words, too much writing to be able to take in the information.")*	4	9
04.15 Provide more focus on lifestyle	The code refers to instances where parents would prefer more focus on overall lifestyle information. *(Healthy weight, e.g., "Mentioning lifestyle rather than the other wording. It's like everything about, you know, lifestyle or how, yeah.")*	1	2
05 Changing the standard letter	The fifth theme describes what parents wish was different in the standard letter. Each code aims to point at a specific problem that parents identified in the standard letter and either wished it were removed or changed. This theme and Theme 04 are similar, but parents discussed different problems.	18	80
05.1 Avoid using black & white	The code refers to instances where parents would prefer the standard letter to be printed in colours.	2	2

Name	Description	Files	References
	(Other weight, e.g., "It's plain. As a parent it's not a letter that you would think wow I need to make drastic changes.")		
05.2 Improve the explanation of the results	The code refers to instances where parents felt the standard letter provides an insufficient explanation of the results. *(Healthy weight, e.g., "So, unless you know what 25 kilo means to somebody whose five...emm, in fact, I can't even remember what my daughter weights, so...emm, I don't know whether...I mean, it says it is in a healthy range but it doesn't...you know, without having something next to it.", Other weight, e.g., "I think sample A is much better in explaining than sample B.")*	2	3
05.3 Improve the layout of results	The code refers to instances where parents perceived the design or layout of the standard letter as distracting. *(Healthy weight, e.g., "It's more positive but not as well designed as in layout.", Other weight, e.g., "It's just the way that, the layout of it is better. So because the, the layout of the letter is done in sections so you read the first bit then there's another section, then there's another section, and then it concludes with if you want any recommendations or further information these are the websites and everything that you can look on which is good.")*	6	14
05.4 Include further visualisations	The code refers to instances where parents felt the standard letter should feature more visualisations or infographics. *(Other weight, e.g., "I'd be quite interested more to see how it actually gauges against other obviously, when they're born and you get given their little record book you have the different centile lines which gives you, obviously which they dot their weight as they sort of progress through the first year or so.")*	1	1

Name	Description	Files	References
05.5 Keep it possible but not necessary	The code refers to instances where parents felt that the standard letter was too forceful. *(Healthy weight, e.g., "I don't really want to call either. I hate having to call people. I'd much rather be able to do it myself rather than having to talk to somebody.", Other weight, e.g., "So I think that's a little bit too direct. I think it should be given the option that they can contact One Life Suffolk if they want to rather than say in the first, as a first step do that.")*	2	3
05.6 Make it more personalised	The code refers to instances where parents perceived the standard letter as lacking individual information regarding their children. *(Healthy weight, e.g., "I think the idea of "Please call and take advantage of the free support we offer." is good, but then this one says that child is in a healthy weight, so I am not sure whether you would want to take up free support, (and so this is that that their weight more than in healthy range?)...", Other weight, e.g., "Everybody's body shape is different, they're all different. It's not to say that everybody is going to be the same.")*	4	4
05.7 Make it more readable	The code refers to instances where parents perceived the standard letter as difficult to read. *(Healthy weight, e.g., "… I think something like "informed choices about lifestyle", I know what that means but I am not sure whether everybody...like it is quite ambiguous.", Other weight, e.g., "The whole letter needs to be readable and rewritten, you know, it's not a very good letter.")*	2	4
05.8 Make it more supportive	The code refers to instances where parents perceived the standard letter as not providing the support they needed.	7	19

Name	Description	Files	References
	(Healthy weight, e.g., "They're kind of the same but I think I prefer the second one because it's just more, I do think it is a bit more inclusive and encouraging.", Other weight, e.g., "I think it's because it's more supportive. It gives you tangible things that you could actually do to make a difference. It's also less scary so you don't read it and feel instantly scared and anxious about it. [They state what the experimental letter has as opposed to the standard letter.]")		
05.9 Make it shorter	The code refers to instances where parents perceived the standard letter as too verbose. *(Other weight, e.g., "It's very word heavy, there's lots of writing, but even though there's a phone number that I can call I don't feel like, unless I've read this letter in detail I don't think I would bother to call that number.")*	1	2
05.10 Make it softer	The code refers to instances where parents perceived the standard letter as too harsh. *(Healthy weight, e.g., "I'd like to see that because then you'd have to look how the words were being kind there or not but this kid in this letter is healthy so it's, you're not saying anything unkind about him.", Other weight, e.g., "It gives the same information just if I was receiving one of them samples I'd rather sample A even though in sample B I do like the table better but I'd rather read more without a table and not be offended.")*	7	14
05.11 Perceived as assuming	The code refers to instances where parents perceived the standard letter as making unwarranted assumptions about their children.	4	5

Name	Description	Files	References
	(Other weight, e.g., "It's just you, that's a prediction that you're predicting that my daughter is going to be overweight because she's slightly overweight now it means she's going to be overweight as a child, as an adult I mean but you don't know that.")		
05.12 Perceived as medicalising	The code refers to instances where parents perceived the standard letter as medicalising their children. *(Other weight, e.g., "No, not really, no, apart from the fact that it talks about diabetes and illnesses but then I guess that's the whole point of it isn't it? To make you feel like that.")*	4	8
05.13 Perceived as patronising	The code refers to instances where parents perceived the standard letter as patronising. *(Other weight, e.g., "I think it's worse. I think it's worse because it is more directive, it sounds a bit more patronising than sample A. Sample A was longer but it didn't feel as if I was being talked down or talked to. Whereas Sample B, the one I have just read, it's like trying to taught a lesson or lectured.")*	1	1
Questions	Theme 06 links to questions 11 to 17 and 19 and occurred during a wider discussion with parents — Theme 07 links to the last two interview questions 18 and 19.		
06 Parental recommendation for the NCMP	The sixth theme occurred across several questions, but usually, once parents had a chance to see both letters and reflect on their experience. The theme involves codes with parents' tips or suggestions either narrowed to the letter or widened to the NCMP initiative. This theme contains the smallest number of references.	11	16

Name	Description	Files	References
06.1 Add further tips or information	The code contains segments where parents discussed how the letters could be improved by adding more information or tips. *(Other weight, e.g., "I don't know if you could link it to the Government sort of guidance with regards to how much exercise a child should be doing, that might be a nice thing to let people know how, I mean I don't know, is it already on there actually, […], it might be on there, on the back page, you know, with all the things you could do it might be already on there.")*	3	3
06.2 Encourage professional support	The code contains segments where parents felt it was important to encourage contact with professional support for any parents who wish to change their child's lifestyle. *(Healthy weight, e.g., "I think...letting the..., encouraging the parents to make changes to children's lifestyle without any support, I don't think that's the right approach certainly.", Other weight, e.g., "I like that you're pointing people in the direction of a School Nurse. I don't think people should be encouraged to discuss this with their children unless there's an actual problem.")*	4	5
06.3 Utilise public outreach	The code contains segments where parents felt that it was important that LGA representatives or service providers commit to engaging actively with the public. *(Other weight, e.g., "So I think that that's really positive and maybe it's sort of something to go into schools and to actually … for One Life Suffolk to maybe go into schools to maybe talk to classes about obviously the importance of regular exercise.")*	2	2
06.4 Improve the use of C4L	The code contains segments where parents discussed the need to increase the visibility of the Change4Life materials.	6	6

Name	Description	Files	References
	(Healthy weight, e.g., "I like the second page, that's really, I mean if you're aiming this information at someone like myself who has a small child this second page is something that I could put in front of her and she would be interested in it …", Other weight, e.g., "Yeah, the page with all the yellow boxes, I do really like that. As I say I think if it was printed off as a separate sheet or, you know, in colour so you could pin it up on your fridge and it would look really motivating I think it's a really good resource but I think it maybe gets missed by people when it's in black and white on the back.")		
07 Discussing the result with children	The seventh and final theme describes the parents' approach to sharing the results of the letter with their children. The themes' codes highlight parents' rationale to either share or withhold the results and their views on how weight discussion with their children could potentially occur.	20	45
07.1 How (why) is the result shared	The code contains segments where parents discussed how and (occasionally) why they had shared the result of the original letter with their child. *(Healthy weight, e.g., "I think we might have just said "oh the school think you're very healthy". We didn't really go into it too much because we always talk about, most meal times we say "no salt, too much salt is bad for you" and all that sort of stuff… ", Other weight, e.g., "I showed her the letter and I said that we need to eat healthy because this letter is all about getting healthy and she did understand. She didn't understand much but she was only four at the time and a young four and then when I told her that she was going to the holiday club to learn more about healthy lifestyles she now, now being five, she talks more about healthiness and she actually tells me what's healthy and what's not healthy.")*	7	8

Name	Description	Files	References
07.2 Reasons (and concerns) why the result is not shared	The code contains segments where parents discuss why they have not shared the result of the original letter with their child. *(Healthy weight, e.g., "So my daughter was tested in reception class which meant she'd only just turned five and because her results were, you know, that she was average build and average height I didn't feel that it would of any benefit to her, you know, to let her know this.", Other weight, e.g., "Because he's five and I prefer that he just enjoys his little life, and I'm his parent and I make sure, I'm responsible for him eating vegetables and fruit, and being active and ensuring that the balance is kept right. He's five. He's not responsible for those decisions just yet.")*	13	20
07.3 What may help when the result is shared	The code contains segments where parents discuss what would potentially help them if they have decided to share the result of the letter with their child. *(Healthy weight, e.g., "Yeah, because she's only just learnt to read so I could read out the sentences but she'd just get bored because it's not about unicorns or ponies and there's no pictures.", Other weight, e.g., "Yeah, so sample B, I would not show her sample A and the suggestions, that is because it refers to her as being overweight where the sample B it doesn't. It just says these results suggest that Noel's weight is above the expected … so the wording is more appropriate.")*	16	17

** Please note that the examples provided in parentheses are not aiming to be exhaustive or the most representative cases. They are provided to illustrate how the code has been used. The code variety is described extensively in the results.*

2.8 Ethics

The following section shows the documents submitted to the Local Ethics Committee at Leeds Beckett University. The documents are presented in full, capitalised sentences indicate changes after the feedback from the Ethics Committee, and any references to the Appendices refer to documents submitted alongside the ethics document.

2.8.1 Study 1

Ethics reference: 50195

National Survey to explore NCMP practice across Local Authorities in England

Martin Čadek, 28.06.17

Checklist

1. Involve direct and/or indirect contact with human participants? * **Yes**
2. Involve analysis of pre-existing data which contains personal or sensitive information not in the public domain? * **Yes**
3. Require permission or consent to conduct? * **Yes**
4. Require permission or consent to publish? * **Yes**
5. Have a risk of compromising confidentiality? * **No**
6. Have a risk of compromising anonymity? * **No**
7. Collect/contain sensitive personal data? * **No**
8. Contain elements which you OR your supervisor are NOT trained to conduct? * **No**
9. Use any information OTHER than that which is freely available in the public domain? * **Yes**
10. Involve respondents to the internet or other visual/vocal methods where participants may be identified? * **Yes**
11. Include a financial incentive to participate in the research? * **No**
12. Involve your own students, colleagues or employees? * **No**
13. Take place outside of the country where you are enrolled as a student, or for staff, outside of the UK? * **No**
14. Involve participants who are particularly vulnerable or at risk? * **No**
15. Involve participants who are unable to give informed consent? * **No**
16. Involve data collection taking place BEFORE informed consent is given? * **No**
17. Involve any deliberate deception or covert data collection? * **No**
18. Involve a risk to the researcher or participants beyond that experienced in everyday life? * **No**
19. Cause (or could cause) physical or psychological harm or negative consequences? *
20. Use intrusive or invasive procedures? * **No**
21. Involve a clinical trial? * **No**
22. Involve the possibility of incidental findings related to health status? * **No**
23. Fit into any of the following security-sensitive categories: concerns terrorist or extreme groups; commissioned by the military; commissioned under an EU security call; involve the acquisition of security clearances? If yes, see Help for guidance. * **No**

Result: Your study has been provisionally classified as Risk Category 2. This means that your project will normally be considered by your Local Research Ethics Coordinator (LREC).

Project summary

Start date of project: 30-Jun-2017

Expected completion date of project: 31-Oct-2017

Is this project externally funded? **No**

Project Summary*

This study will explore the operational differences of the NCMP (National Child Measurement Programme; https://digital.nhs.uk/services/national-child-measurement-programme/) across Local Authorities (LAs) in England from the perspective of local commissioners and carers for children who are overweight and very overweight. The research will employ a national survey across 152 LAs health and wellbeing boards and public health teams who are obligated to operate the NCMP in their region. The study will gather data about how LAs deliver the NCMP in their region and will ask them to upload/send a copy of their NCMP routine feedback, among other additional documents related to the NCMP. This is the first study in a PhD project which has the overall aim to develop improved NCMP feedback.

Project Group Members*

Is this a group project? **Yes, provide group member names:**

Dr Stuart Flint (Director of Studies)

Dr Claire Griffiths (Supervisor)

Dr Ralph Tench (Supervisor)

Mr Martin Cadek (PhD Student)

1) Project Overview

Please give a brief overview of your study, including a summary of your aims and objectives:

The study will explore operational differences of the NCMP (the National Child Measurement Programme; https://digital.nhs.uk/services/national-child-measurement-programme/) across Local Authorities (LAs) in England from the perspective of local commissioners and carers for children who are overweight and very overweight. There are 152 LAs how to have health and wellbeing boards and public health teams that are responsible for the NCMP in their region. The study will employ a survey design, aiming to collect data from those. The study will gather information about how LAs deliver information about the measurement day to carers and their children (i.e., opt-out), how they communicate the results of the measurements day back to them, what medium they use to deliver the feedback (such as calling carers), and if they have child weight management services available in their area to support the NCMP.

The study employs a national survey to achieve the aim of exploring the variability of the NCMP routine feedback in England. The survey aims to gather more generic data regarding the NCMP with a focus on the NCMP routine feedback (usually a letter that informs carers about their children's BMI) and its national variations.

After collecting all data and closing the survey, the research team will use the data to create alternative versions of the NCMP parental letters (i.e., the NCMP routine feedback). The letters will be evaluated as part of the collaborative feedback sessions that invite key stakeholders to provide feedback to newly developed parental letters. Among the invited stakeholders will be parents from Suffolk's OneLife service, Public Health England (PHE) representatives, Suffolk LA representatives, non-government organisation representatives, and academics.

The rationale to conduct a national survey is that while operational guidelines about the NCMP provided by PHE advise LAs on how the NCMP should be implemented, it is unclear to what extent they are followed by LAs (Public Health England, 2016).

To ensure the aim is fulfilled, the objectives identified below should be achieved:

- Survey 152 upper-tier LAs in England responsible for operating the NCMP by sending the invitation to participate to their Directors of Public Health.

- Allow LAs to upload documents they use to inform carers and their children about the measurement day.

- Allow LAs to upload documents they use to inform carers and their children about the results of the measurement day.

- Collaborate with Public Health England, Local Government Association, or Association of Directors of Public Health to decrease the dropout rate of LAs from the survey.

2) Methodology

Please give a description of your methodology, including any data collection and analysis methods:

National survey

The survey will be completed online using the Qualtrics™ platform and will follow the stages of NCMP in chronological order. The essential stages are: a) Planning the measurements, b) Doing the measurements, c) Providing routine feedback, d) Providing pro-active (i.e., active) feedback (Public Health England, 2016). These stages were reflected in the development of

the survey and distributed into relevant blocks of questions (see the attached form with questions used in the survey).

The first block of questions will identify the LA's commissioner and LA they represent, followed by questions about: 1) the planning the measurement day; 2) the measurement day; 3) the routine feedback after the measurement day; 4) any additional (i.e., active) feedback after the routine feedback; and 5) sociodemographic information and supplementary questions. To ensure validity and reliability, the survey will be piloted with commissioners in Suffolk, and a convenient sample of commissioners who are contacted through experts in the area, for example, other commissioners in health and wellbeing boards or researchers in public health.

As part of the survey, LAs will be asked to provide actual and up to date examples of letters they use to inform parents about the measurement day, letters sent as part of the routine feedback, any additional documents they attach with any of the letters, and describe any pro-active feedback they do on top of the routine feedback. This will provide a wealth of data that will be analysed as described below.

The survey will provide data that will mostly require basic descriptive statistics (as it is expected to have the actual population of LAs) and qualitative methods, specifically thematic content analysis of provided documents (Braun & Clarke, 2006). All NCMP documents provided by LAs will be grouped into more general categories with the aim to further evaluate their effectiveness in explaining children's results to their carers'. The documents will be used to create a new version of the parental letter that will be later on tested in Suffolk CC (future study commencing on September 18').

Collaborative feedback sessions

After collecting all data and closing the survey, the research team will use the data to create alternative versions of the NCMP parental letters (i.e., the NCMP routine feedback). The letters will be evaluated as part of the collaborative feedback sessions that invite key stakeholders to provide feedback to newly developed parental letters. Among the invited stakeholders will be parents from Suffolk's OneLife service, Public Health England (PHE) representatives, Suffolk LA representatives, non-government organisation representatives, and academics.

The sessions will take two weeks and run in two iterations (Week 1 Iteration and Week 2 Iteration). The sessions will run between the 16th and 27th of July 2018. Both sessions will be hosted online, the letters will be uploaded to http://realtimeboard.com, and stakeholders will be able to comment on relevant parts of the letters.

Before participating in the feedback, stakeholders will sign an informed consent. The only information collected about the stakeholders will be their role. For example: PHE Representative, Parent of children in lifestyle service, Fat activist, LA representative, or Academic.

3) Main Ethical Considerations

Please give a description of the main ethical considerations involved in the study:

National survey

The primary consideration related to the survey is to ensure that the results will not be of any harm to LAs by providing their data. To ensure this, any evaluation of the NCMP data will occur at a group level, not an individual level. This means that the NCMP feedback will be first clustered into more general categories according to common features and then evaluated

further. Additionally, the weight of responsibility for improving the NCMP is on PHE rather than an individual LA; therefore, suggestions for improvement are going to be discussed directly with PHE; however, any recommendation from individual LAs will be taken into account.

Although the NCMP process is operated by each LA individually, most of the documents are publicly available. There are exceptions such as the NCMP routine feedback (usually a letter), which, despite being provided as specimen by PHE, is often tailored to each LA's needs, and the final version is usually provided only to families involved in the NCMP. It's noteworthy that sending out the routine feedback is not a mandated activity; therefore, some LAs won't deliver the NCMP routine feedback and thus cannot answer some of the questions (Public Health England, 2016).

Any additional feedback delivered after the routine is further customised based on the LAs needs; however, the focus of the study is primarily focused on the routine feedback and basic description of active feedback.

Collaborative feedback sessions

Any stakeholders who provided the feedback will be anonymised, and only their roles will be recorded. For example: PHE Representative, Parent of children in lifestyle service, Fat activist, LA representative, or Academic. Before participating in the feedback, stakeholders will sign an informed consent.

4) Human Participants

If your study includes Human Participants (or their data), please give a description of who will be included:

National survey

- LA representatives (such as Directors of Public Health, and Directors of Children, Young People services, and colleagues they recommend via snowball method) who have sufficient knowledge of the NCMP management and can describe in detail the local version of the NCMP routine and active feedback provided to carers with children who are overweight and very overweight (e.g., letters).

Collaborative feedback sessions

- Parents from Suffolk's OneLife service, Public Health England (PHE) representatives, Suffolk LA representatives, non-government organisation representatives, and academics.

5) Recruitment and Participation

If your study includes Human Participants, please give a brief description of the recruitment process, how you will ensure voluntary participation, if (and how) informed consent will be obtained prior to participants taking part in the study, and the right of withdrawal from the research process:

National survey

The primary sample will consist of up to 152 LAs represented by one or more commissioners who are responsible or have good knowledge of managing the NCMP. The primary contact will be the directors of public health contacted via their emails that are publicly available on LAs websites. The emails will be collected and compiled into a mailing list that will be used for recruitment purposes. To increase participation rates, collaboration with PHE, LGA, and potentially ADPH will be pursued. Alternative routes of recruitment, such as video presentation, social media advertisement, phone calls, written letters, or contacting via trusted sources, will be considered if the above method (i.e., mailing list) fails to satisfy the recruitment needs. Should this happen, additional documents (e.g., a sample of recruitment letter for social media) to this ethics document will be added. A specimen of the letter used for contact and recruitment purposes is included as an attachment, as is the study introduction sheet, consent form, debrief form, and questions used in the survey. Participants will have the right to withdraw their data from the study at any time prior to publication on 1st October 2017.

Collaborative feedback sessions

The stakeholders will be contacted using professional resources available to the research team. This will involve sending email invitations through contacts network available to researchers and direct invitations. Parents from Suffolk's OneLife service will be invited through the OneLife service manager. Public Health England (PHE) representatives, Suffolk LA representatives, non-government organisation representatives, and academics will be contacted directly. Before participating in the feedback, all stakeholders will sign an informed consent. Participants will have the right to withdraw their data from the study at any time prior to publication on 1st October 2018.

6) Risks and Benefits

Please give a brief description of how, when and where the research will take place and whether there are any risks and/or benefits involved:

National survey

The survey will be accessed via an online platform - Qualtrics™. Participants will be recruited once ethical clearance has been granted and from the end of June. Participants will be given two weeks to respond before a reminder email is sent. Below are the possible risks and benefits for participants.

Risks for LAs

- The research team considers the routine and active feedback and any information provided alongside it as confidential data. To minimise potential concerns that LAs might have and to ensure good research practice, the researchers will ensure that all data is stored treated in line with the Data Protection Bill 1998 (Act, 1998).

- Job roles such as Director of Public Health are rather time demanding; therefore, the survey has been developed to minimise the necessary time resources of completing the survey. Alternatively, personnel under the public health directors will be asked to participate in their place. The survey should not take more than 15 minutes to complete.
- The feedback evaluation may be considered as threatening to LAs (i.e. unwarranted critique of the job they are doing). Therefore, instead of evaluating each and every single LAs routine feedback, the feedback will be evaluated in general clusters (i.e., groups of feedback), and potential improvements will be addressed to PHE as suggested changes to operational guidelines.
- There are also risks of files being stolen or misplaced. This risk is minimised by storing the files on LBU servers, inside LBU facilities, and on password-protected/encrypted computers.

Benefits for LAs

- Commissioners will obtain exclusive access to the results of the evaluation and will have an opportunity to discuss the results with the research team; the research team will also offer consultancy to LAs that would like to improve their letters.
- Researchers will provide brief guidelines (in addition to currently provided guidelines) with a set of practical steps that LAs can take to improve their current routine feedback (depending on the type of feedback they provide). This will also ensure the dissemination of results back to the practice of LAs. These guidelines will be updated as the overall project progresses and new data emerge with the aim to collaborate on their development with PHE.

Collaborative feedback sessions

Risks

- There are no risks associated with participating in the online feedback sessions.

Benefits

- Parents and fat activists have been largely overlooked as potential stakeholders in the development of the NCMP parental letters. Having their voice represented in the development will increase the overall quality of the letter and help to address some of the public criticism addressed to the letters.

7) Personal Data, Anonymity and Confidentiality

Please specify what type of information/data will be collected/analysed and the source(s). In addition, specify if and how you will ensure the anonymity of participants and keep the information confidential:

Data will be overseen by Dr Stuart Flint and Mr Martin Cadek, and its access will be restricted only to the research team, which includes Dr Stuart Flint, Professor Ralph Tench, Dr Claire Griffiths, and Mr Martin Cadek.

Data will be stored on password-protected LBU servers; however, they might be provided in the anonymised form as part of a publication and open data policy. Data will fall under the standard data policy of LBU.

National survey

All personal data collected within the survey will be kept confidential and anonymised, and kept under Data Protection Act 1998 (Act, 1998); similarly, all documents collected as part of the survey will be confidential and anonymised (e.g., the logo of a local authority, names of Directors of Health will be removed or cut out). Potential evaluation of the feedback may be perceived as unfavourable by LAs; therefore, the data will be clustered into more generic feedback categories and evaluated without linking particular feedback to a particular LA.

If at any stage of research appears a problem or a situation that gives cause for concern or gives the research team a duty to act, the research team will first consult the occurred situation with participants and urge them to act. Alternatively, the research team may act on behalf of the participant under such circumstances. If approaching the situation this way would put someone at greater risk, the research team may breach confidentiality without asking participants. However, the nature of this project does not appear to pose any such risk; therefore, similar situations are perceived here as very unlikely.

Collaborative feedback sessions

All personal data collected as part of the feedback will be kept confidential and anonymised and kept under Data Protection Act 1998 (Act, 1998). The only information that will be collected is the role of the person providing the feedback.

8) Reporting and Dissemination

Please give details of the planned dissemination and specify if the findings from the research will be published and whether any permission is required for this:

It is expected that this research will be disseminated in the form of publication in academic journals, scientific conferences, PhD thesis, and back towards local authorities in the form of guidelines. The current projects aim to establish collaboration with PHE, LGA, ADPH, which means that the research could also be published as a policy document, report, or guidelines via mentioned organisations.

Statement in consent will be included to inform participants about the aim to publish research in academic journals, conferences, reports, and theses.

9) Location of research

Will the research take place outside of the country where you are enrolled as a student, or for staff, outside of the UK?

No

10) Collaborative Projects

Is the research a collaborative project (i.e., it involves more than one institution):

No

11) Any other permission or external ethical approval required to undertake the project

Please specify if the project requires any other ethical approval or permissions not mentioned previously in this application and how and when these will be obtained

No

12) Please indicate the supporting documents submitted by ticking the appropriate boxes below:

For projects involving human participants, you must submit, where appropriate, the Participant Information Sheet/consent form. You must also submit every communication a participant will see or receive. Failure to do so will cause delays to the application.

1. Participant Information Sheet(s): **Yes**
2. Consent Form(s): **Yes**
3. Assent Form (usually for children participants): **No**
4. Recruitment documents, e.g., posters, flyers, advertisements, email invitations, letters, web pages if online research: **No**
5. Measures to be used, e.g., questionnaires, surveys, interview schedules, psychological tests: **Yes**
6. Screening questionnaire: **No**
7. Letters/communications to and from gatekeepers/third parties: **No**
8. Evidence of any other approvals or permissions, e.g., NHS research ethics approval, in-country approval: **No**
9. Research proposal/protocol (no more than 2-3 A4 pages): It is not a requirement that this is included; however, if this would help the understanding of a complex project by the reviewer(s), please include: **No**
10. Risk assessment from: Some projects may require a risk assessment form: see the Procedures document for details (e.g., projects involving a physical intervention, collecting data off-campus): **No**
11. Approval documentation for projects involving ionising radiation: **No**
12. Confirmation of insurance and indemnity cover: Some projects need to be referred to the Insurance & Risk Officer: see the Procedures document for details: **No**
13. Other document/s**: Yes**

2.8.2 Study 2

Ethics reference: 61319

Summary of Changes

As opposed to the previously proposed version, this version excluded Study 3. It was a decision made because the documents related to Study 3 that the LREC requested are not finalised yet and cannot be attached. Study 3 will be submitted in separate ethics applications once the documents are read.

The participants' information sheet and consent sheet have been updated. Several questions were added to the survey, some because the consent needs to be given for each statement, and others to ensure that the obtained data are from eligible participants.

Other revisions were made based on feedback provided by LREC.

UPDATE (13/02/2019)

Due to low survey responses and complications in the design of the study, we decided to include another site (Lewisham) where to evaluate the letter. The site will use very similar letters, and the evaluation will use the same Qualtrics online form (only names are different). The Lewisham trial will use randomised sampling as opposed to observational design in Suffolk CC. All changes in ethics form are written in upper case.

UPDATE (06/03/2019)

Changes since the last update are uppercase.

- Changes in wording to ensure the study Part 1 is in the past, while study Part 2 is in the future.

- Changed appendices.

- Provided rationale for increased Amazon price

- Added independent contact, Consent, information sheet, and debrief is part of Appendix 3

- Removed appendices 2a, b, c and included them in 2_Study_2_Survey_Suffolk(+SurveyInf+Consent+Debrief) similarly to the Suffolk version.

- Included Lewisham opt-out letter in the appendix.

UPDATE (25/06/2019)

As of June 2019, there was no significant change in participant response rate. We've decided to extend the scale of the study from the focus on two Local Authorities (Parts 1 & 2) to all Local Authorities in England (National Level).

The changes are all written in uppercase; however, as this is the third amendment, I am attaching Appendix 0 (0_EthicsApplication_Amend_National_Level.docx), which contains tracked changes since the last approved update. The document is extracted online form. Key changes to the form are described below:

- New "Part 3" was added to Study 2. This part focuses on the national level (England) as we hope this may increase participants' response rate.

- Part 2 and Part 1 have now happened, and I've changed the wording to the past tense where appropriate.

- Appendices 6a, 6b, 6c, 6d, and 6e were added. They end with P3 (Part 3), indicating that they are relevant to the latest amendment.

- Appendix 6a_Study_2_Survey_P3(+SurveyInf+Consent+Debrief).docx contains Survey (new questions are highlighted yellow), Survey Information Page, Consent Page, and Debrief Page. Besides adding a few questions, only minor cosmetic changes occurred in the survey (i.e., amending dates).

- Part 3 does not include any attachments regarding the NCMP letters (each LA sends their own letters, but I can confirm they are similar to those in appendix 4a and 5a)

- The novel incentive is used. For each participant, I will donate to a charity until the total of 200£ is reached. This will remove the issue where some participants may be hesitant to accept rewards.

- Although there is a question about providing contact details, ONLY participants from Suffolk (as per Part 1) will be contacted. We will send the survey to Suffolk CC but not to Lewisham (as described in relevant parts of the ethics form).

Enhancing and Evaluating the NCMP in Suffolk, LEWISHAM AND ACROSS OTHER LOCAL AUTHORITIES IN ENGLAND (Non-invasive; Study 2)

Martin Čadek, 05.07.18

LREC: ***Nicola Kime***

Checklist

24. Involve direct and/or indirect contact with human participants? * **Yes**
25. Involve analysis of pre-existing data which contains personal or sensitive information not in the public domain? * **Yes**
26. Require permission or consent to conduct? * **Yes**
27. Require permission or consent to publish? * **Yes**
28. Have a risk of compromising confidentiality? * **Yes**
29. Have a risk of compromising anonymity? * **Yes**
30. Collect / contain sensitive personal data? * **Yes**
31. Contain elements which you OR your supervisor are NOT trained to conduct? * **No**
32. Use any information OTHER than that which is freely available in the public domain? * **Yes**
33. Involve respondents to the internet or other visual/vocal methods where participants may be identified? * **Yes**
34. Include a financial incentive to participate in the research? * **Yes**
35. Involve your own students, colleagues or employees? * **No**
36. Take place outside of the country where you are enrolled as a student, or for staff, outside of the UK? * **No**
37. Involve participants who are particularly vulnerable or at risk? * **No**
38. Involve participants who are unable to give informed consent? * **No**
39. Involve data collection taking place BEFORE informed consent is given? * **No**
40. Involve any deliberate deception or covert data collection? * **No**
41. Involve a risk to the researcher or participants beyond that experienced in everyday life? * **No**
42. Cause (or could cause) physical or psychological harm or negative consequences? *
43. Use intrusive or invasive procedures? * **No**
44. Involve a clinical trial? * **No**
45. Involve the possibility of incidental findings related to health status? * **No**
46. Fit into any of the following security-sensitive categories: concerns terrorist or extreme groups; commissioned by the military; commissioned under an EU security call; involve the acquisition of security clearances? If yes, see Help for guidance. * **No**

Result: Your study has been provisionally classified as Risk Category 2. This means that your project will normally be considered by your Local Research Ethics Coordinator (LREC).

Project summary

Start date of project: 9th – November – 2018

Expected completion date of project: 30th – SEPTEMBER – 2019

Is this project externally funded? **No**

Project Summary*

This ethics refers to Study 2, which extends the previous study "National Survey to explore NCMP practice across Local Authorities (LAs) in England" (Study 1). The previous study was approved in June 2017 by LREC Dr Duncan Radley.

THIS IS AN AMENDED VERSION OF THE ETHICS FORM THAT WAS APPROVED 2ND OF NOVEMBER 2018 BY LREC DR NICOLA KIME. PREVIOUSLY APPROVED ETHICS FORM FOCUSED SOLELY ON SUFFOLK CC; THIS VERSION EXTENDS THE STUDY 2 INTO LEWISHAM BOROUGH AND OTHER LOCAL AUTHORITIES IN ENGLAND. AS A RESULT, STUDY 2 HAS BEEN SEPARATED INTO THREE INDEPENDENT PARTS. PART 1 OF STUDY 2 OCCURRED IN SUFFOLK CC, AND PART 2 OCCURRED IN LEWISHAM. PART 3 IS THE MOST RECENT AMENDMENT ADDED AS OF JUNE 2019. PART 3 EXTENDS STUDY 2 TO THE NATIONAL (ENGLAND) LEVEL.

PART 1 OF THE STUDY STARTED ON 9TH OF NOVEMBER 2018 IN SUFFOLK CC (COUNTY COUNCIL) WITH ETHICS APPROVAL. PART 2 STARTED 15TH OF MARCH 2019 IN LEWISHAM BOROUGH AND WAS INDEPENDENT OF PART 1. PART 3 OF THIS STUDY IS PLANNED TO COMMENCE 5TH OF JULY 2019 AND IS INDEPENDENT OF PREVIOUS PARTS.

Study 2 – Part 1 enhanced the NCMP (National Child Measurement Programme; https://www.gov.uk/government/collections/national-child-measurement-programme) in Suffolk, England by providing new results letters that parents receive as part of the programme. The research DELIVERED one version of the letter to reception year children and the other to Year 6 children. Letters WERE delivered to all schools in the LGA. The impact of the letters IS evaluated using a survey hosted on Qualtrics™. The evaluated versions WERE a set of four letters developed at Suffolk Council (control version) and a set of four letters developed at LBU (experimental version).

Study 2 – Part 2 USED similar letters to Part 1 in Lewisham borough with minor adjustments reflecting LA's requirements. The major difference occurred in the way the study WAS designed. Instead of sending one version of letters only to the selected year group, the letters WERE randomised across all schools in the LA (as cluster randomised control trial; CRCT). The impact of the letters WAS evaluated using a survey hosted on Qualtrics™.

STUDY 2 – PART 3 REFLECTS ON DRAWBACKS OF PREVIOUS PARTS – INCAPABILITY TO ACHIEVE SUFFICIENT RESPONSE RATES. PART 3 IS THE LAST PART THAT IS FEASIBLE TO COMPLETE BEFORE THE PROJECT FINISHES (DUE IN FEBRUARY 2020). DIFFERENT FROM PREVIOUS PARTS, WHICH FOCUSED ON THE LOCAL LEVEL, PART 3 WILL INVITE PARTICIPANTS ACROSS ENGLAND IN THE HOPE TO ACHIEVE A REPRESENTATIVE SAMPLE

SIZE AND BETTER RESPONSE RATES. INSTEAD OF EVALUATING LETTERS PREPARED BY THE RESEARCH TEAM, EACH PARTICIPANT WILL EVALUATE VERSIONS SPECIFIC TO THEIR LOCAL AUTHORITIES (SIMILAR TO THE CONTROL LETTERS IN APPENDIX 4A, 5A).

Project Group Members*

Is this a group project? **Yes, provide group member names:**

Dr Stuart Flint (Director of Studies)

Dr Ralph Tench (Supervisor)

Mr Martin Cadek (PhD Student)

1) Project Overview

Please give a brief overview of your study, including a summary of your aims and objectives:

STUDY 2 – PART 1 ENHANCED the NCMP (www.gov.uk/government/collections/national-child-measurement-programme) in Suffolk, England, by altering the results letters that parents receive (parental letters) as part of the programme. Altered letters WERE compared in Suffolk County against the standard version that was developed by the council in 2017. Two sets of different versions were used.

Two outcomes of the study ARE BEING evaluated. The first focuses on a potential change in service uptake in Suffolk County. The service uptake data will be provided by OneLife Suffolk (weight management service). The second outcome MEASURES opinions and user experience via provided online survey (hosted at Qualtrics™).

The rationale to conduct this research is driven by a lack of evidence-based information about the effectiveness of the NCMP parental letters and low rates of referrals from the NCMP to OneLife Suffolk service.

Study 2 – Part 2 WAS conducted in Lewisham borough. The aims of the second part are shared with the first part, and only design WAS changed from observational to CRCT across schools as it allows stronger evaluation of both letters.

STUDY 2 – PART 3 WILL BE CONDUCTED AT THE NATIONAL LEVEL IN ENGLAND TO MITIGATE THE LOW RESPONSE RATE IN PREVIOUS PARTS. THE AIM IS TO GATHER PARENTS' OPINIONS REGARDING RESULTS LETTERS SPECIFIC TO THEIR LOCAL AUTHORITY. THE AUTHOR OF THIS DOCUMENT ASSUMES THAT THESE LETTERS ARE SIMILAR TO THOSE PROVIDED IN APPENDIX 4A AND 5A. COMPARISON WITH THE EXPERIMENTAL VERSION IS POSSIBLE ONLY IF RESPONDENTS RESIDE IN SUFFOLK CC (NOT IN LEWISHAM OR OTHER LOCAL AUTHORITIES). IN CASE PARTICIPANTS ARE FROM SUFFOLK, THE RESEARCHER WILL BE ABLE TO DETERMINE THE VERSION OF THE LETTER BASED ON THE YEAR GROUP OF THEIR CHILDREN (APPROPRIATE QUESTION WAS ADDED TO THE SURVEY; PLEASE SEE APPENDIX 6A).

In summary, the overall aim of Study 2 – PART 1 AND 2 is to develop parental letters that perform better than the standard specimens provided by Suffolk CC and Lewisham. It is expected that in contrast to the specimen, recipients will perceive the newly developed

parental letters more favourably, and the letter will perform better across indicators associated with the service available in Suffolk County and Lewisham.

PART 3 WILL EXPLORE THE OPINIONS OF PARENTS REGARDING THE RESULT LETTERS AT THE NATIONAL LEVEL BUT WILL NOT PRODUCE A COMPARABLE LETTER (I.E., NEWLY DEVELOPED SPECIMEN AS IN PREVIOUS PARTS), AND UNLESS PARTICIPANTS RESIDE IN SUFFOLK CC, THIS PART WILL NOT COMPARE CONTROL LETTERS TO EXPERIMENTAL LETTERS. IT IS EXPECTED PARENTS WILL PERCEIVE THE LETTER DIFFERENTLY BASED ON THE RESULTS (I.E., WEIGHT CATEGORY) STATED IN THE LETTER.

PART 1 IN SUFFOLK HAS STARTED ON THE 9TH OF NOVEMBER (APPROVED 2ND OF NOVEMBER), PART 2 STARTED ON THE 15TH OF MARCH 2019. PART 3 WILL COMMENCE 5TH OF JULY 2019.

2) Methodology

Please give a description of your methodology, including any data collection and analysis methods:

BOTH PARTS RUN IN DIFFERENT TIMES AND SITES; HOWEVER, THEY BOTH MEASURE potential change in service uptake and user experience via provided online survey (hosted at Qualtrics™). The survey for both parts is similar (only the name of council changes).

PART 1

ON 9th OF NOVEMBER 2018, Study 2 – Part 1 DISTRIBUTED two sets of letters. The first set of four letters (control version) WAS a version developed by the Suffolk Council in 2017. This version is a locally adapted specimen developed by PHE (Public Health England) between 2014 – 2017. It's the most commonly used version across a majority of LAs in England.

The second set of four letters (experimental version) was developed by the research team at Leeds Beckett University with data collected from Study 1 (An explorative analysis of parental letters from 93 Local Authorities) and in collaboration with relevant stakeholders who provided their opinions as part of feedback on experimental parental letters hosted inside Real-time Board platform (https://realtimeboard.com/app/). Stakeholders were academics in the area, parents from the HOOP (http://hoopuk.org.uk/; Helping Overcome Obesity Problems), Suffolk's Council Team members, OneLife Service Manager, and PHE representatives. The primary aim when developing the experimental version was to enhance a user experience with these letters. Specific focus was given to avoid any language that could potentially offend parents, create letters that are non-stigmatising, and have accessible English (i.e., readability).

Each set THAT WAS DISTRIBUTED consists of the letter for parents of children who were classed either as healthy weight, underweight, overweight, or very overweight (eight letters in total).

The original design of Part 1 planned to allocate both control and experimental letters through stratified random sampling to schools (i.e., group of schools form a stratum) in Suffolk County. This design would have selected 30 schools into the experimental group and 30 schools into the control group and ensure roughly equal variance across demographic variables in both experimental and control groups.

Because of limitations on the side of the administration system IN SUFFOLK CC, we had to forego this design. It proved to be impossible to split the letters and randomly allocate them due to different services for Year 6 and Reception year, due to low staff capacity, and leave of senior staff members from the LA's Public Health team.

After discussing different scenarios with Suffolk CC, the researcher has agreed to switch to an observational study design where control letters were delivered to Year 6 and Reception year received the experimental letter.

The final design included no randomisation; however, the letters were split so that all control letters were delivered to parents of children in Year 6 (by the end of December 2018) while all experimental letters were delivered to parents of children in Reception year (from January of 2019 until May of 2019).

To facilitate participation, an option to win one of four £25 amazon vouchers was offered to all participants who completed the survey and entered their contact details (i.e., phone or email) in Suffolk CC.

Participants will be able to access the survey using URL links at the end of the letter. Before they have a chance to start the survey, participants will be asked to give informed consent.

PART 2

Study 2 – Part 2 started ON 15TH OF MARCH 2019. Part 2 TOOK place in Lewisham borough – an alternative site TO PART 1. The decision TO CONDUCT THE STUDY ON ALTERNATIVE SITE was made as the logistics in the LA ENABLED CRCT design that is considered the strongest possible scenario of evaluation, AND BECAUSE PART 1 HAD EXTREMELY LOW RESPONSE RATE AT THE TIME OF SUBMITTING THIS FORM.

AS PART OF THE CRCT, WE randomly SELECTED from the list of all eligible schools in Lewisham half of the schools THAT RECEIVED the standard letter – the control group, and half of the schools THAT RECEIVED the experimental letter developed at LBU – the experimental group. It WAS expected that demographic differences across schools disappear due to randomisation; however, this IS CURRENTLY CHALLENGING TO evaluate by the researcher DUE TO the LOW RESPONSE RATE. As part of the CRCT, both Year 6 and Reception year children's parents HAD equally likely chance to receive either experimental or control version of the letter.

The letters that WERE distributed in Lewisham are in Appendices 5a and 5b. The letters in Lewisham WERE similar to Suffolk CC's letters (Appendix 4a, 4b); however, they REFLECTED local needs (for example, different services).

Similarly to the previous part, an option to win one of four £35 amazon vouchers in Lewisham borough IS BEING offered to all participants who provided their contact details. THE INCENTIVE WAS INCREASED BASED ON EXPERIENCE FROM THE PREVIOUS PART. WE HOPED TO MITIGATE THE LOW RESPONSE RATE BY INCREASING THE REWARD. IN CONTRAST TO PART 1, PARTICIPANTS' CONTACT DETAILS ARE NOT BEING USED FOR ADDITIONAL RESEARCH (THE CONTACT IS GIVEN SOLELY TO GIVE AWAY THE PRICE).

PARTICIPANTS WERE able to access the survey using URL links at the end of the letter. Before they HAD a chance to start the survey, participants WERE asked to give informed consent.

CONTRADICTED TO OUR EXPECTATIONS, AND THE REWARD INCREASE DID NOT LEAD TO AN INCREASE IN RESPONSES. IT IS NOW BELIEVED THAT PARTICIPANTS HAVE EITHER DIFFICULTY NAVIGATING FROM THE LETTER TO THE SURVEY AND/OR THEY DON'T WISH TO SPEND TOO MUCH ATTENTION ON THE LETTER AND/OR THEY READ THE LETTER ONLY PARTIALLY OR NOT AT ALL.

PART 3

(PLEASE NOTE THAT ALL APPENDICES RELEVANT TO PART 3 END WITH P3)

STUDY 2 – PART 3 IS PLANNED TO START 5TH OF JULY 2019. WHILE PREVIOUS PARTS COMPARED THE CONTROL LETTER TO THE NEWLY DEVELOPED EXPERIMENTAL LETTER, PART 3 WILL NOT INVOLVE THE DEVELOPMENT OF THE EXPERIMENTAL LETTER. WE MAY STILL COMPARE THE LETTERS IF PARTICIPANTS RESIDE IN SUFFOLK CC; HOWEVER, THIS IS ONLY THANKS TO THE FACT THAT PART 1 SENT LETTERS ACROSS YEAR GROUPS AND DID NOT RANDOMIZE THEM – PLEASE PARAGRAPH BELOW.

WE HOPE THAT SOME RESPONDENTS FROM SUFFOLK CC WILL STILL RESPOND TO THIS SURVEY, IF THIS HAPPENS, WE WILL BE ABLE TO COMPARE THE VERSIONS IF PARENTS ANSWERED WHAT YEAR GROUP THEIR CHILDREN BELONG TO (YEAR 6 IN SUFFOLK RECEIVED CONTROL VERSION; RECEPTION YEAR RECEIVED EXPERIMENTAL VERSION). THIS COMPARISON IS POSSIBLE ONLY IN SUFFOLK AS PARTICIPANTS FROM LEWISHAM HAVE RECEIVED THE LETTERS RANDOMLY ON THE SCHOOL LEVEL. SUFFOLK PARTICIPANTS MAY STILL BE INVITED FOR AN INTERVIEW BUT ONLY IF THEY HAVE PROVIDED THEIR CONTACT DETAILS (THE NUMBER OF PARTICIPANTS WILL BE DETERMINED BY THEME SATURATION; PLEASE SEE PART 1).

THE SURVEY WILL BE SENT TO PARENTS IN ENGLAND, EXTENDING THE SCOPE OF STUDY 2 FROM LOCAL TO NATIONAL LEVEL. IN CONCLUSION, RESPONDENTS WILL BE ASKED TO PROVIDE OPINIONS REGARDING THE LETTER AT THEIR LOCAL AUTHORITY. THE LETTERS PARENTS RECEIVE FROM THEIR LOCAL AUTHORITIES SHOULD BE SIMILAR TO THOSE PROVIDED IN APPENDICES 4A AND 5A (CONTROL VERSIONS).

RECRUITMENT OF PARTICIPANTS WILL BE DONE BY A) CONTACTING ONLINE GROUPS KNOWN TO BE FREQUENTLY USED BY PARENTS; B) SOCIAL MEDIA SITES; C) DIRECT EMAILING TO SCHOOL ADMINISTRATORS WITH A REQUEST TO DISTRIBUTE THE SURVEY TO PARENTS.

APPENDIX 6E PROVIDES A TEMPLATE OF COMMUNICATION TO A). PARENTS' GROUPS WE WISH TO CONTACT ARE WWW.MUMSNET.COM, MUMSMEETUP.COM, WWW.NETMUMS.COM, WWW.BRITMUMS.COM, WWW.MUMSCLUB.CO.UK, WWW.MADEFORMUMS.COM, WWW.LOVEDBYPARENTS.COM, WWW.HONESTMUM.COM.

APPENDIX 6B PROVIDES A TEMPLATE OF COMMUNICATION TO B). THE SOCIAL MEDIA WE WISH TO USE ARE TWITTER AND FACEBOOK. THE SURVEY WILL BE ACCESSIBLE AS A PUBLIC POST.

FINALLY, APPENDICES 6C AND 6D PROVIDE TEMPLATES OF COMMUNICATION TO C). WE WILL ATTEMPT TO CONTACT ALL SCHOOLS IN SUFFOLK CC. AFTER CONTACTING

ALL SCHOOLS IN SUFFOLK CC, WE WILL CONTACT ALL SCHOOLS IN ENGLAND. SCHOOLS WILL BE ASKED TO DISTRIBUTE THE EMAIL TO PARENTS USING PARENT EMAIL AND THE TEMPLATE PROVIDED IN APPENDIX 6D.

TO MOTIVATE PARENTS TO PARTICIPATE IN THE SURVEY, WE WILL EMPLOY NOVEL INCENTIVES. WE HAVE ADDED A QUESTION IN THE SURVEY REGARDING AN OPTION TO DONATE TO A CHARITABLE CAUSE. WE WILL ALLOW PARENTS TO DECIDE IF THEY WISH TO DONATE TO ONE OF THE TWO CHARITIES WE PROPOSE IN A SURVEY QUESTION. FOR EVERY PARTICIPANT, WE WILL DONATE 1£ UNTIL 200£ OF TOTAL DONATION IS REACHED.

THE FINAL VERSION OF THE SURVEY IS ATTACHED IN APPENDIX 6A. THE APPENDIX ALSO CONTAINS SURVEY INFORMATION, CONSENT PAGE, AND DEBRIEF PAGE; HOWEVER, THERE WERE ONLY COSMETIC CHANGES (E.G., CHANGING DATES). THE NEWLY ADDED QUESTIONS ARE HIGHLIGHTED YELLOW IN THE SURVEY.

DATA ANALYSIS – PARTS 1 AND 2

Data will be further processed using R version 4.0.3 and R Studio 1.4.1103. Regression analyses with adjustment for all identified confounders will be used TO INFER RESULTS to the whole population in Suffolk; however, this won't be necessary for Lewisham as the adjustments occur in design. To further improve the statistical inference, bootstrapped statistics (i.e., resampling) of the original sample will be calculated using the boot package in R. The measured outcomes are linked statistics (i.e., number of link access), mean user experience (measured by User Experience Questionnaire; https://www.ueq-online.org/), and binary responses to the survey questions (e.g., Did you use the "NHS.uk/C4L" web link provided in the letter?).

DATA ANALYSIS – PART 3

REGRESSION ANALYSES WITH ADJUSTMENT FOR ALL IDENTIFIED CONFOUNDERS WILL BE USED TO INFER RESULTS ACROSS THE POPULATION OF ENGLAND. TO FURTHER IMPROVE THE STATISTICAL INFERENCE, BOOTSTRAPPED STATISTICS (I.E., RESAMPLING) OF THE ORIGINAL SAMPLE WILL BE CALCULATED USING THE BOOT PACKAGE IN R. THE MEASURED OUTCOMES ARE LINK STATISTICS (I.E., NUMBER OF LINK ACCESS), MEAN USER EXPERIENCE (MEASURED BY USER EXPERIENCE QUESTIONNAIRE; HTTPS://WWW.UEQ-ONLINE.ORG/), AND BINARY RESPONSES TO THE SURVEY QUESTIONS (E.G., DID YOU USE THE "NHS.UK/C4L" WEB LINK PROVIDED IN THE LETTER?).

3) Main Ethical Considerations

Please give a description of the main ethical considerations involved in the study:

The study requires participants to read the participants' information sheet and give informed consent before providing any data. After the EACH PART is conducted, participants are debriefed.

There are two main ethical considerations for Study 2 – PART 1 AND PART 2.

The first is to ensure that difference between each set of letters is not resulting in worsened experiences for parents and their children.

Parents IN BOTH PARTS RECEIVED OR WILL RECEIVE in the majority the control letters which have been used in Suffolk and Lewisham last year. These letters are considered a standard version across many Local Authorities in England. It's not expected that the control version should pose a significant discomfort to participants as similar letters have been tested and used previously.

The experimental version is a result of collaborative work which used the control version as a draft. These letters are expected to improve the experience; thus, the format is not expected to lead to a significant discomfort either.

The second is the fact that the experimental version IN PART 1 was sent out only to parents of reception year children (or to half of the population in the case of Lewisham). Due to logistic reasons, IT WAS impossible to inform participants in advance. Although participants HAD an option to opt-out from the whole NCMP process (Appendix 4c – Suffolk Letter Opt-Out); however, not from a part of the NCMP (for example, from receiving the results letters) and have been informed in the opt-out letters about the involvement of Leeds Beckett University in the NCMP. THIS SECOND ISSUE IS SPECIFIC TO PART 1. IN PART 2, PARENTS WILL HAVE AN EQUALLY RANDOM CHANCE TO RECEIVE THE LETTER BASED ON WHICH SCHOOL THEIR CHILDREN ATTENDS. ONCE AGAIN, PARENTS COULD OPTED-OUT FROM THE WHOLE NCMP PROCESS (SEE APPENDIX 5c OPT-OUT LETTER FOR LEWISHAM)

IN TERMS OF PART 3, WE DO NOT FORESEE ANY ADDITIONAL ETHICAL CONSIDERATIONS.

In a scenario where participants do feel any discomfort, they will have an option to contact either Martin Cadek (PhD student) or Dr Stuart Flint (Director of Studies), who will discuss the matter with them, and if needed, refer them to further help. The contact details are provided on the first page of the survey and in the debrief document (the last page of the survey).

4) Human Participants

If your study includes Human Participants (or their data), please give a description of who will be included:

In Study 2, the human participants are adult parents or carers of children in the Reception year and Year 6 (4-5; 10-11) measured by the NCMP cohort 2018/2019 in Suffolk County AND Lewisham AND OTHER LOCAL AUTHORITIES. Adult parents or carers in Year 6 received the control version, and adult parents or carers of children in the Reception year the experimental version of the NCMP result letter.

5) Recruitment and Participation

If your study includes Human Participants, please give a brief description of the recruitment process, how you will ensure voluntary participation, if (and how) informed consent will be obtained prior to participants taking part in the study, and the right of withdrawal from the research process:

Participants FROM PARTS 1 AND 2 COULD ORIGINALLY withdraw their data from the study by the end of May 2019. An online informed consent WAS received at the beginning of the survey. The detailed recruitment plan of Study 2 is explained in the methods section of this document.

GIVEN THE STUDY CONTINUES, WE WILL MODIFY THE WITHDRAWAL DATE UNTIL THE END OF SEPTEMBER 2019 IN ALL PARTS.

6) Risks and Benefits

Please give a brief description of how, when and where the research will take place and whether there are any risks and/or benefits involved:

Both control and experimental groups receive letters by post. In other words, letters are received at the participant's homes. Inside the letter, a link to an online survey is attached. Participants can use the link to complete the survey at any time convenient for them. Participants may benefit from participating in the survey by having a chance to win one of four 25£ Amazon vouchers in Suffolk CC and 35£ in Lewisham borough if they include their contact details. Additionally, their feedback will help to improve the parent's letters in Suffolk and Lewisham.

WE DO NOT FORESEE ANY ADDITIONAL RISKS REGARDING PART 3. WITH REGARDS TO BENEFITS, WE WILL ALLOW PARTICIPANTS TO CHOOSE A CHARITY THAT WE WILL DONATE MONEY TO ON THE PARTICIPANT'S BEHALF.

ALL PARTICIPANTS MAY BENEFIT BY BEING ABLE TO SHARE OPINIONS REGARDING THE RESULT LETTERS.

7) Personal Data, Anonymity and Confidentiality

Please specify what type of information/data will be collected/analysed and the source(s). In addition, specify if and how you will ensure the anonymity of participants and keep information confidential:

Data will be overseen by Dr Stuart Flint and Mr Martin Cadek, and its access will be restricted only to the research team, which includes Dr Stuart Flint, Professor Ralph Tench, and Mr Martin Cadek.

Initially, all data are stored on Qualtrics servers; the following link https://www.qualtrics.com/privacy-statement/ provides further information on how Qualtrics handles data collected by its customers (the research team). Their data statement is that "Customers own and control all information input into the Qualtrics software or generated on behalf of customers in connection with the Services ("Data")."

Afterwards, all data will be downloaded from Qualtrics servers into the researcher's computers and stored on a password-protected LBU hard disc or cloud. They might be provided in the anonymised form as part of a publication and open data policy.

The principal investigator (PI) is guided by the Data Protection Act 1998 (Act, 1998) and The General Data Protection Regulation 2016/679 (GDPR) while handling and safeguarding any data provided by participants. The PI has also completed a data protection course at LBU people development to ensure up to date knowledge.

8) Reporting and Dissemination

Please give details of the planned dissemination and specify if the findings from the research will be published and whether any permission is required for this:

It is expected that this research will be disseminated in the form of publication in academic journals, scientific conferences, PhD thesis, and back towards local authorities in the form of guidelines. The research could also be published as a policy document, report, or guidelines via organisations such as Public Health England.

Statement in consent will be included to inform participants about the aim to publish research in academic journals, conferences, reports, and theses.

9) Location of research

Will the research take place outside of the country where you are enrolled as a student, or for staff, outside of the UK?

No

10) Collaborative Projects

Is the research being a collaborative project (i.e., it involves more than one institution):

No

11) Any other permission or external ethical approval required to undertake the project

Please specify if the project requires any other ethical approval or permissions not mentioned previously in this application and how and when these will be obtained

No

12) Please indicate the supporting documents submitted by ticking the appropriate boxes below:

For projects involving human participants, you must submit, where appropriate, the Participant Information Sheet/consent form. You must also submit every communication a participant will see or receive. Failure to do so will cause delays to the application.

14. Participant Information Sheet(s): **Yes**
15. Consent Form(s): **Yes**
16. Assent Form (usually for children participants): **No**
17. Recruitment documents, e.g., posters, flyers, advertisements, email invitations, letters, web pages if online research: **Yes**
18. Measures to be used, e.g., questionnaires, surveys, interview schedules, psychological tests: **Yes**
19. Screening questionnaire: **No**
20. Letters/communications to and from gatekeepers/third parties: **No**
21. Evidence of any other approvals or permissions, e.g., NHS research ethics approval, in-country approval: **No**
22. Research proposal/protocol (no more than 2-3 A4 pages): It is not a requirement that this is included; however, if this would help the understanding of a complex project by the reviewer(s), please include: **Yes**

23. Risk assessment form: Some projects may require a risk assessment form: see the Procedures document for details (e.g., projects involving a physical intervention, collecting data off-campus): **No**
24. Approval documentation for projects involving ionising radiation: **No**
25. Confirmation of insurance and indemnity cover: Some projects need to be referred to the Insurance & Risk Officer: see the Procedures document for details: **No**
26. Other document/s**: Yes**

2.8.3 Study 3

Ethics reference: 61078

Using semi-structured interviews to evaluate the NCMP parent letters in Suffolk, UK (Non-invasive; Study 3)

LREC: ***Nicola Kime***

Checklist

47. Involve direct and/or indirect contact with human participants? * **Yes**
48. Involve analysis of pre-existing data which contains personal or sensitive information not in the public domain? * **Yes**
49. Require permission or consent to conduct? * **Yes**
50. Require permission or consent to publish? * **Yes**
51. Have a risk of compromising confidentiality? * **Yes**
52. Have a risk of compromising anonymity? * **Yes**
53. Collect/contain sensitive personal data? * **Yes**
54. Contain elements that you OR your supervisor are NOT trained to conduct? * **No**
55. Use any information OTHER than that which is freely available in the public domain? * **Yes**
56. Involve respondents to the internet or other visual/vocal methods where participants may be identified? * **Yes**
57. Include a financial incentive to participate in the research? * **Yes**
58. Involve your own students, colleagues or employees? * **No**
59. Take place outside of the country where you are enrolled as a student, or for staff, outside of the UK? * **No**
60. Involve participants who are particularly vulnerable or at risk? * **No**
61. Involve participants who are unable to give informed consent? * **No**
62. Involve data collection taking place BEFORE informed consent is given? * **No**
63. Involve any deliberate deception or covert data collection? * **No**
64. Involve a risk to the researcher or participants beyond that experienced in everyday life? * **No**
65. Cause (or could cause) physical or psychological harm or negative consequences? *
66. Use intrusive or invasive procedures? * **No**
67. Involve a clinical trial? * **No**
68. Involve the possibility of incidental findings related to health status? * **No**
69. Fit into any of the following security-sensitive categories: concerns terrorist or extreme groups; commissioned by the military; commissioned under an EU security call; involve the acquisition of security clearances? If yes, see Help for guidance. * **No**

Result: Your study has been provisionally classified as Risk Category 2. This means that your project will normally be considered by your Local Research Ethics Coordinator (LREC).

Project summary

Start date of project: 1st of July – 2019

Expected completion date of project: 31st of July – 2019

Is this project externally funded? **No**

Project Summary*

This ethics refers to Study 3, which is planned to commence by the 1ST of JULY 2019. The study builds on previous projects, "National Survey to explore NCMP practice across Local Authorities (LAs) in England" (Study 1) that was approved in June 2017 by LREC Dr Duncan Radley, and "Enhancing and Evaluating the NCMP" in Suffolk" (Study 2) that has been approved in November 2018 LREC Nicola Kime. Study 3 aims to interview parents whose children participated in the 2018/2019 NCMP (National Child Measurement Programme; https://www.gov.uk/government/collections/national-child-measurement-programme) in Suffolk, England. These parents have either received one of four control measurement letters developed by Suffolk CC or one of four experimental letters developed at Leeds Beckett University (LBU). The research will employ semi-structured Skype interviews and evaluate parental opinions regarding the two-letter versions.

Project Group Members*

Is this a group project? **Yes, provide group member names:**

Dr Stuart Flint (Director of Studies)

Dr Ralph Tench (Supervisor)

Mr Martin Cadek (PhD Student)

1) Project Overview

Please give a brief overview of your study, including a summary of your aims and objectives:

The aim of **Study 3** is to continue to evaluate the NCMP parental letters (https://www.gov.uk/government/collections/national-child-measurement-programme) as the final study of the PhD "*A national, collaborative analysis of the NCMP process with parents, carers, and other stakeholders.*" Two sets of four letters are being evaluated (Appendices 7A and 7B). One set was developed in Suffolk CC, England (control version), and the other developed collaboratively with various stakeholders at Leeds Beckett University (experimental letter). THE EXPERIMENTAL VERSION WAS DISTRIBUTED AMONG FAMILIES WITH CHILDREN IN THE RECEPTION YEAR (AGED 4 – 5), WHILE THE CONTROL VERSION WAS SENT TO FAMILIES WITH CHILDREN IN YEAR 6 (AGED 10 – 11).

The evaluation takes the form of semi-structured Skype interviews with parents, which will be recorded. Parents will be recruited from MULTIPLE SOURCES. PLEASE SEE SECTION 2 FOR FURTHER DETAILS.

The primary aim of the study is to explore parents' opinions of the NCMP letters, PRIORITISING FOCUS ON PSYCHOLINGUISTIC ELEMENTS OF THE LETTERS, and perceptions about the alternative version of the letter (control or experimental depending on which they initially received).

The rationale to conduct this research is driven by the lack of evidence-based information about the effectiveness of the NCMP parental letters and low rates of referrals from the NCMP to OneLife Suffolk service. In summary, the overall aim of Study 3 is to gain a greater understanding of parental letters and see if collaboratively developed letters (experimental) perform better than the standard specimens (control) provided by Suffolk CC. It is expected that in contrast to the specimen, recipients will perceive the newly developed parental letters more favourably.

2) Methodology

Please give a description of your methodology, including any data collection and analysis methods:

Two sets of letters were assigned to parents and their children in the NCMP cohort. The Reception year children received the experimental letter, whilst the Year 6 children received the control letter. Each set consists of letters for parents of children who were classed either as UNDERWEIGHT, healthy weight, overweight, or very overweight (eight letters in total).

The first set of four letters (control version) WAS developed by the Suffolk Council in 2017. This version WAS a locally adapted specimen developed by PHE (Public Health England) between 2014 – 2017. It's the most commonly used version across a majority of LAs in England.

The second set of four letters (experimental version) was developed by the research team at Leeds Beckett University with data collected from Study 1 (an explorative analysis of parental letters from 92 Local Authorities; 61% PARTICIPATION RATE) and in collaboration with relevant stakeholders. Stakeholders provided their opinions as part of feedback on experimental parental letters hosted inside Real-time Board platform

(https://realtimeboard.com/app/). Stakeholders were 3 x academics, 1 x representative from PHE, 2 x parents, 1 x School Nurse Lead, 1 x NCMP manager, and 1 x Service provider.

The primary aim when developing the experimental version was to enhance the user experience with these letters. Specific focus was given to avoiding any language that could potentially offend parents, creating letters that are non-stigmatising, and USE accessible English.

Parents who received these letters were encouraged to provide feedback by accessing an online survey. Participants were able to access the survey using URL links PRINTED at the end of all letters. THIS REQUIRED PARTICIPANTS TO TYPE THE LINKS INTO THE BROWSER. Before the survey started, participants were asked to READ STUDY 2 SURVEY INFORMATION AND give informed consent (Appendices 6a AND 6b); they also needed to consent to be invited to further research on the NCMP. To facilitate survey responses, an option to win one of four £25 Amazon vouchers WAS offered to all participants who completed the survey and entered their contact details (i.e., phone or email).

PARENTS WILL BE RECRUITED FROM MULTIPLE SOURCES. SOME PARTICIPANTS WILL COME FROM STUDY 2. THESE PARTICIPANTS PROVIDED CONSENT (APPENDIX 6B) WHETHER THEY WISH TO BE ASKED REGARDING THEIR PARTICIPATION IN THE FUTURE STUDY (STUDY 3). UPON INVITING TO THE STUDY 3, PARTICIPANTS WILL BE NOTIFIED THAT THEY WILL BE ASKED TO PROVIDE AN ADDITIONAL CONSENT SPECIFICALLY FOR STUDY 3 (APPENDIX 3) AND VERBAL CONSENT AT THE BEGINNING OF THE SEMI-STRUCTURED INTERVIEW.

WE WILL ATTEMPT TO RECRUIT ADDITIONAL PARTICIPANTS FROM NONGOVERNMENTAL SOURCES. THESE SOURCES WILL BE ONELIFE SERVICE IN SUFFOLK (GATEKEEPER FORM IS ATTACHED; APPENDIX 8), PARENTS' GROUPS ON FACEBOOK, AND WEBSITES SUCH AS WWW.MUMSNET.COM, MUMSMEETUP.COM, WWW.NETMUMS.COM, WWW.BRITMUMS.COM, WWW.MUMSCLUB.CO.UK, WWW.MADEFORMUMS.COM, WWW.LOVEDBYPARENTS.COM, WWW.HONESTMUM.COM

THE POST THAT WILL BE USED IN FACEBOOK GROUPS IS ATTACHED IN APPENDIX 9A.

WITH REGARDS TO THE SITES ABOVE, WE'LL ASK ADMINISTRATORS OF WEBSITES TO CONTACT THEIR USER BASES WITH REGARDS TO AN INVITATION TO THE INTERVIEW. PROVIDED AS APPENDIX 9B.

The study mitigates limitations of previous STUDY 2 by utilising a qualitative approach to understand parental experiences. Describing experiences through the survey would require an extensive set of open-ended questions and increase the cognitive burden on participants; therefore, a qualitative approach (interview) is better suited for this task.

The interview will be hosted and recorded using Skype Business. The audio will be transcribed and further analysed.

The semi-structured interview consists of several themes that are presented in Appendix 4.

The following will be explored (listed in the interview order):

- WELCOME AND PROCEDURES THEME PREPARE PARTICIPANTS FOR THE INTERVIEW AND ENSURES THAT THEY HAVE ALL INFORMATION ABOUT THE RESEARCH;
- Basic information theme PURPOSE IS TO ENSURE THAT PARTICIPANTS ARE ELIGIBLE;
- Parent's LAY VIEWS theme EXPLORES PARENT'S expectations PRIOR TO RECEIVING the letter and READING STRATEGY THEY'VE USED to work with the letter;
- Linguistic FEATURES of the LETTER theme FOCUSES SOLELY ON language IN THE LETTER, and how THIS IMPACTS PARENTS, LITERALLY WHAT IMPRESSION IT LEAVES;
- EVALUATING LETTERS AND THEIR LINGUISTIC FEATURES theme PRESENTS ALTERNATIVE LETTER ON THE SCREEN (ALONGSIDE THE ONE THEY HAVE RECEIVED), AND I ASK PARENTS TO DIRECTLY COMPARE the letter they have received with THE alternative letter;
- SHARING RESULTS THEME FOCUSES ON THE POSSIBILITY OF SHARING THE RESULTS WITH THEIR child, RATHER THAN WHETHER THEY SHARED IT OR NOT.

There is also an additional theme regarding several questions around the demographic of parents. This theme is RELEVANT ONLY TO participants who were not recruited from Study 2 (PARENTS THAT ARE RECRUITED FROM THE STUDY ARE NOT ASKED TO ANSWER QUESTIONS WITHIN THIS THEME).

Overall, 6 themes (EXCLUDING DEBRIEF AND DEMOGRAPHIC THEMES) are listed above with a total of 12 questions. The detail of ALL THE THEMES, INCLUDING ALL QUESTIONS can be seen in Appendix 4.

Once all themes were debated, participants will be debriefed (Appendix 5). The debrief will be given verbally, and debrief document will be OFFERED to BE EMAILED AFTER THE INTERVIEW (USING THE PARTICIPANT'S CONTACT EMAIL). Participants will ALSO HAVE ENOUGH time to ask any questions regarding the study.

Overall, the researcher expects the interview to last up to one hour.

3) Main Ethical Considerations

Please give a description of the main ethical considerations involved in the study:

The study will require participants to read the participants' information (Appendix 2) sheet and give written and verbal informed consents (Appendix 3) before taking part in the interview. After the interview is conducted, participants will be debriefed. THE INTERVIEW WILL BE RECORDED ONLY UPON BOTH VERBAL AND WRITTEN AGREEMENT FROM PARTICIPANTS. IF PARTICIPANTS DO NOT WISH THE INTERVIEW TO BE RECORDED, THE RESEARCHER WILL ASK THEIR PERMISSION TO TAKE NOTES DURING THE INTERVIEWS.

The researcher will ensure that participants have provided their verbal consent before any questions are asked and that the consent is recorded. Participants will also be informed that while the interview is sound recorded, the recording will be deleted once transcripts have been created.

In a scenario where participants do feel any discomfort, they will have an option to contact either Martin Cadek (PhD student) or Dr Stuart Flint (Director of Studies), who will discuss the matter with them, and if needed, refer them to further help. THEY WILL BE ALSO GIVEN CONTACT DETAILS FOR LREC IF PARTICIPANTS NEED INDEPENDENT CONTACT OUTSIDE THE RESEARCH TEAM. The contact details are provided in the INFORMATION SHEET (APPENDIX 2).

4) Human Participants

If your study includes Human Participants (or their data), please give a description of who will be included:

In Study 3, the human participants are adult parents or carers of children in the Reception year and Year 6 (4-5; 10-11) measured by the NCMP cohort 2018/2019 in Suffolk County. Adult parents or carers in Year 6 received the control version, and adult parents or carers of children in the Reception year the experimental version of the NCMP result letter.

5) Recruitment and Participation

If your study includes Human Participants, please give a brief description of the recruitment process, how you will ensure voluntary participation, if (and how) informed consent will be obtained prior to participants taking part in the study, and the right of withdrawal from the research process:

Participants can withdraw their data from the study by the 31ST of AUGUST 2019. Written informed consent is taken before the interview starts, and verbal consent is taken at the beginning of the interview. The recruitment plan of Study 3 is explained in the methods section of this document.

6) Risks and Benefits

Please give a brief description of how, when and where the research will take place and whether there are any risks and/or benefits involved:

Participants will be invited to participate in a semi-structured interview via a private one to one online call hosted on Skype Business. Participants will be asked to make the call in a location and time convenient to them. At some point, the researcher will also use screen sharing to show participants both letters on the screen. It's not required for participants to use video during the call.

In case participants cannot access Skype, the call will be done using their mobile number or a landline. However, in this case, the researcher will e-mail the letter to the participant and ask them to review it and send it back.

Participants feedback will help to improve the parent's letters in Suffolk.

7) Personal Data, Anonymity and Confidentiality

Please specify what type of information/data will be collected/analysed and the source(s). In addition, specify if and how you will ensure the anonymity of participants and keep information confidential:

Data will be overseen by Dr Stuart Flint and Mr Martin Cadek, and its access will be restricted only to the research team, which includes Dr Stuart Flint, Professor Ralph Tench, and Mr Martin Cadek.

RECORDINGS WILL BE MADE WITH THE HELP OF RECORDING SOFTWARE AVAILABLE AS PART OF SKYPE BUSINESS. All recordings will be stored on a password protected LBU hard disc ON WORK LAPTOP. Once transcripts have been made, the original sound recordings will be deleted FROM THE HARD DISC. ANY FURTHER DATA WILL BE STORED ON THE LBU HARD DISC ON THE WORK LAPTOP. Transcripts might be provided in the anonymised form as part of a publication and open data policy.

ALL INTERVIEWS WILL BE CODED BY TIME OF RECORDING AND BASIC DEMOGRAPHIC INFORMATION. AN EXAMPLE OF THE CODING IS 13_JUNE_19_Y6.DOCX, WHERE THE FORMAT FOLLOWS DATE_YEAR_YEAR_GROUP. IF THE PARTICIPANT WAS RECRUITED FROM STUDY 2, QUALTRICS ID WOULD BE ATTACHED AT THE TOP OF THE DOCUMENT. THERE IS NO NEED TO STORE ANY PERSONAL INFORMATION ABOUT THE PARTICIPANTS; THEREFORE, EMAILS AND PHONE NUMBERS WILL BE REMOVED FROM QUALTRICS.

The principal investigator (PI) is guided by the Data Protection Act 1998 (Act, 1998), and the General Data Protection Regulation 2016/679 (GDPR) while handling and safeguarding any data provided by participants. The PI has also completed data protection course at LBU people development to ensure up to date knowledge.

8) Reporting and Dissemination

Please give details of the planned dissemination and specify if the findings from the research will be published and whether any permission is required for this:

It is expected that this research will be disseminated in the form of publication in academic journals, scientific conferences, PhD thesis, and back towards local authorities in the form of guidelines. The research could also be published as a policy document, report, or guidelines via organisations such as Public Health England.

Statement in consent will be included to inform participants about the aim to publish research in academic journals, conferences, reports, and theses.

9) Location of research

Will the research take place outside of the country where you are enrolled as a student, or for staff, outside of the UK?

No

10) Collaborative Projects

Is the research being a collaborative project (i.e., it involves more than one institution):

No

11) Any other permission or external ethical approval required to undertake the project

Please specify if the project requires any other ethical approval or permissions not mentioned previously in this application and how and when these will be obtained

No

12) Please indicate the supporting documents submitted by ticking the appropriate boxes below:

For projects involving human participants, you must submit, where appropriate, the Participant Information Sheet/consent form. You must also submit every communication a participant will see or receive. Failure to do so will cause delays to the application.

27. Participant Information Sheet(s): **Yes**
28. Consent Form(s): **Yes**
29. Assent Form (usually for children participants): **No**
30. Recruitment documents, e.g., posters, flyers, advertisements, email invitations, letters, web pages if online research: **Yes**
31. Measures to be used, e.g., questionnaires, surveys, interview schedules, psychological tests: **Yes**
32. Screening questionnaire: **No**
33. Letters/communications to and from gatekeepers/third parties: **Yes**
34. Evidence of any other approvals or permissions, e.g., NHS research ethics approval, in-country approval: **No**
35. Research proposal/protocol (no more than 2-3 A4 pages): It is not a requirement that this is included; however, if this would help the understanding of a complex project by the reviewer(s), please include: **Yes**
36. Risk assessment from: Some projects may require a risk assessment form: see the Procedures document for details (e.g., projects involving a physical intervention, collecting data off-campus): **No**
37. Approval documentation for projects involving ionising radiation: **No**
38. Confirmation of insurance and indemnity cover: Some projects need to be referred to the Insurance & Risk Officer: see the Procedures document for details: **No**
39. Other document/s**: Yes**

3 Appendix for Findings

The following appendix presents additional content related to findings across the studies.

3.1 Study 1 – Analysis of the NCMP Delivery

3.1.1 Response pattern

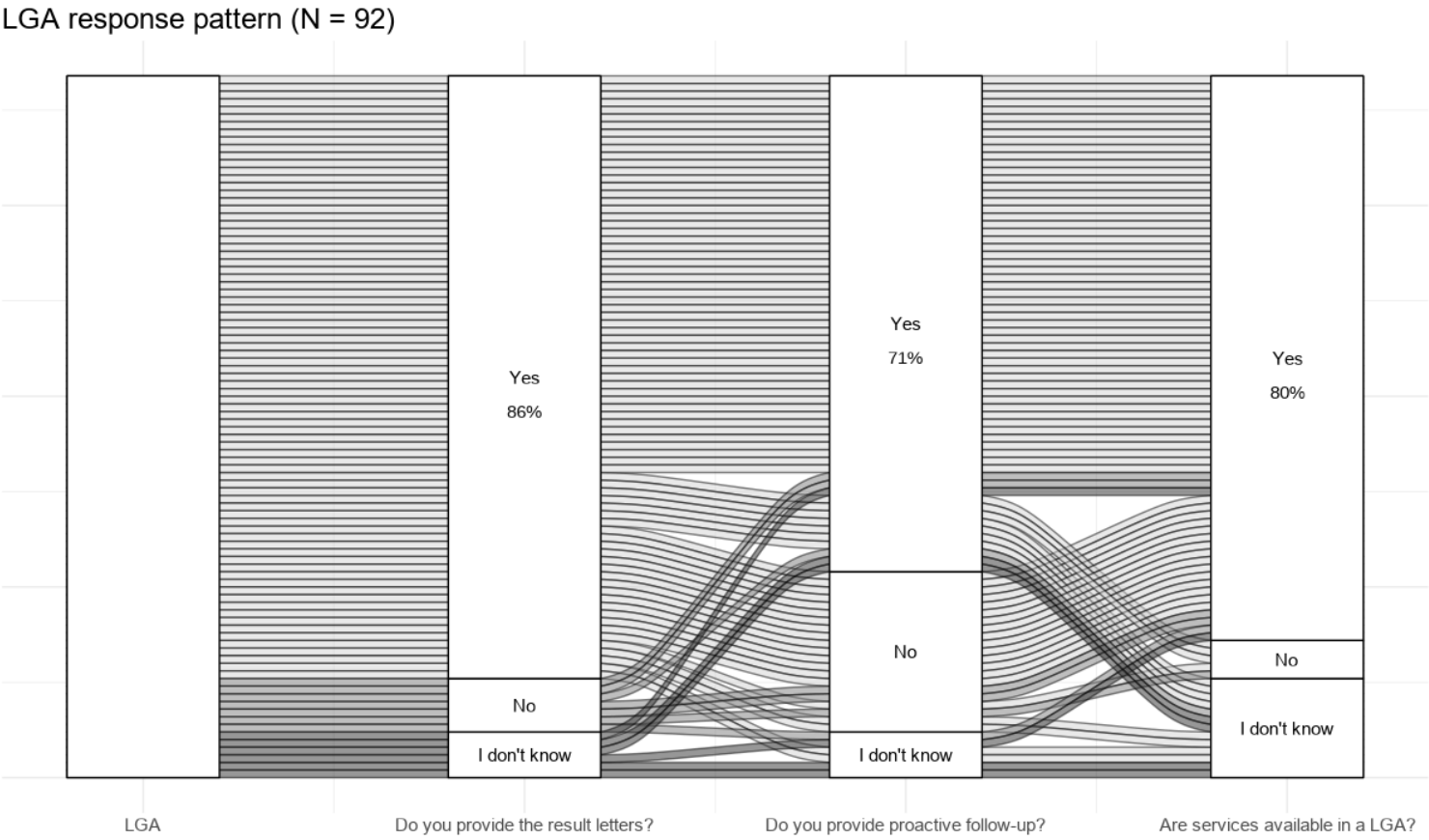


Figure 46: The Response Pattern of LGAs

Figure 46 shows the schema of response flow and the number of responses across some of the key questions regarding the delivery of the NCMP.

3.1.2 The delivery of the opt-out letter

Table 2: The Delivery of the Opt-out Letters

Main theme	***Definition***	***Subthemes***	***Examples by LGA***
Clarifications (R = 19)	Changes to clarify the process of the NCMP.	*Date, opt-out*	"*Add an opt-out section at the end of the letter...*"
Language (R = 24)	Changes to modify the language of the opt-out letters, change the tone, or improve readability.	*Make friendly, personalised, Improve readability*	"*Make it more personal and user friendly...*"; "*To improve readability for parents.*"; "*language is slightly modified to be a bit more friendly and less formal*"
Localisations (R = 46)	Changes to "localise" letter to a given area.	*Contacts, design, other screening, services*	"*The letter is locally tailored as for the Reception age*"; "*To fit with local commissioned services...*"; "*We also branded our services and used the stapline...*"
User-driven (R = 13)	Changes due to feedback from users.	*Parents, public health director*	"*Based on feedback from parents who have previously complained about the letter and the NCMP programme.*"; "*(wording)...Director of Public Health is comfortable to use.*"

* References

3.1.3 Parents' feedback

3.1.3.1 Explaining the parents' feedback modifications

Table 3: Parents' Feedback

Main theme	***Definition***	***Subthemes***	***Examples by LGA***
Clarifications (R* = 10)	Changes to clarify results letter and the process of the NCMP.	*Confidentiality, results*	"*...reiterate information on confidentiality.*"; "*The tailored letter adds further information, including 'hat 'some medical treatments can mean that BMI centile is not the best way to measure your 'child'*"; "*To give more information about the weight categories*"
Design (R = 5)	Changes to modify the design of the result letter.	*Nudge, printing costs, visuals*	"*...apply 'nudge theory' to the letter - the information remains the same but is presented and structured differently to the standard letter.*"; "*We also send a growth chart to indicate visually to parent the degree of difference from percentile...*"
Language (R = 20)	Changes to modify the language of the result letters, change the tone, or improve readability.	*Emphasise health issues, make friendly, neutralise, personalise, Improve readability*	"*Added in a little more information about how obesity can cause health problems...*"; "*To make the wording more user friendly.*"; "*It was agreed to soften the language...*"; "*Trying to make it a more personal*"; "*...to be more readable.*"
Localisations (R = 50)	Changes to "localise" letters to a given area.	*Contacts, other screening, services*	"*...local number and information.*"; "*...provide information on dental health.*"; "*To promote local weight management services.*"
User driven (R = 19)	Changes due to feedback from users.	*Parents, public health director, school nurses*	"*The provider received a number of complaints from parents regarding the suggestion that their child was overweight.*"; "*We have significantly changed the results letter following focus group activity with parents. Many parents told us the language was not engaging and felt blaming.*"; "*...wording approved by programme leads and Director of public health.*"; "*We decided to change our letters in consultation with our school nurses as they had expressed a concern that some parents felt offended by the letter.*"

* References

3.1.3.2 How can parents reach the LGA?

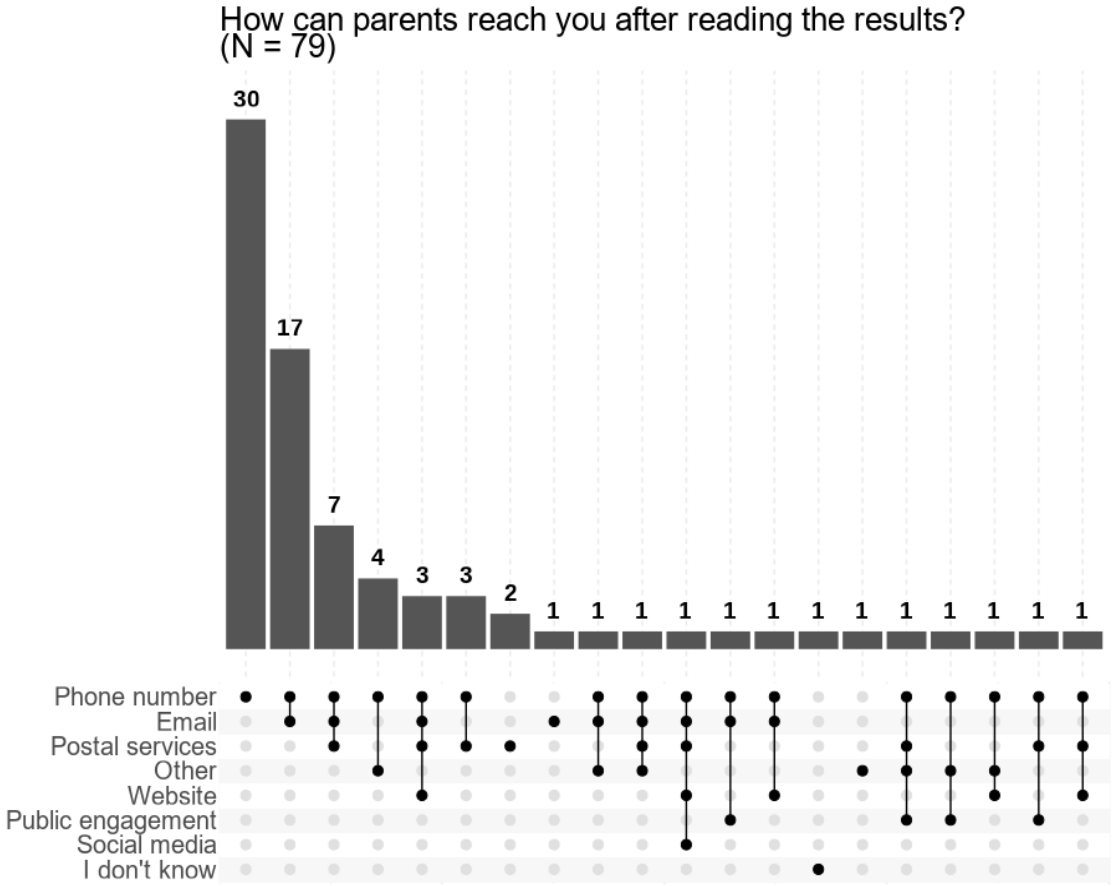


Figure 47: How Can Parents Contact the LGA

Figure 47 shows how parents could contact the LGA after receiving the feedback letter. Most of the representatives indicated that the two most common methods were phone number (NR = 30) and phone number combination with email (NR = 17). These contact options were listed within the result letters parents receive.

3.1.4 Available services

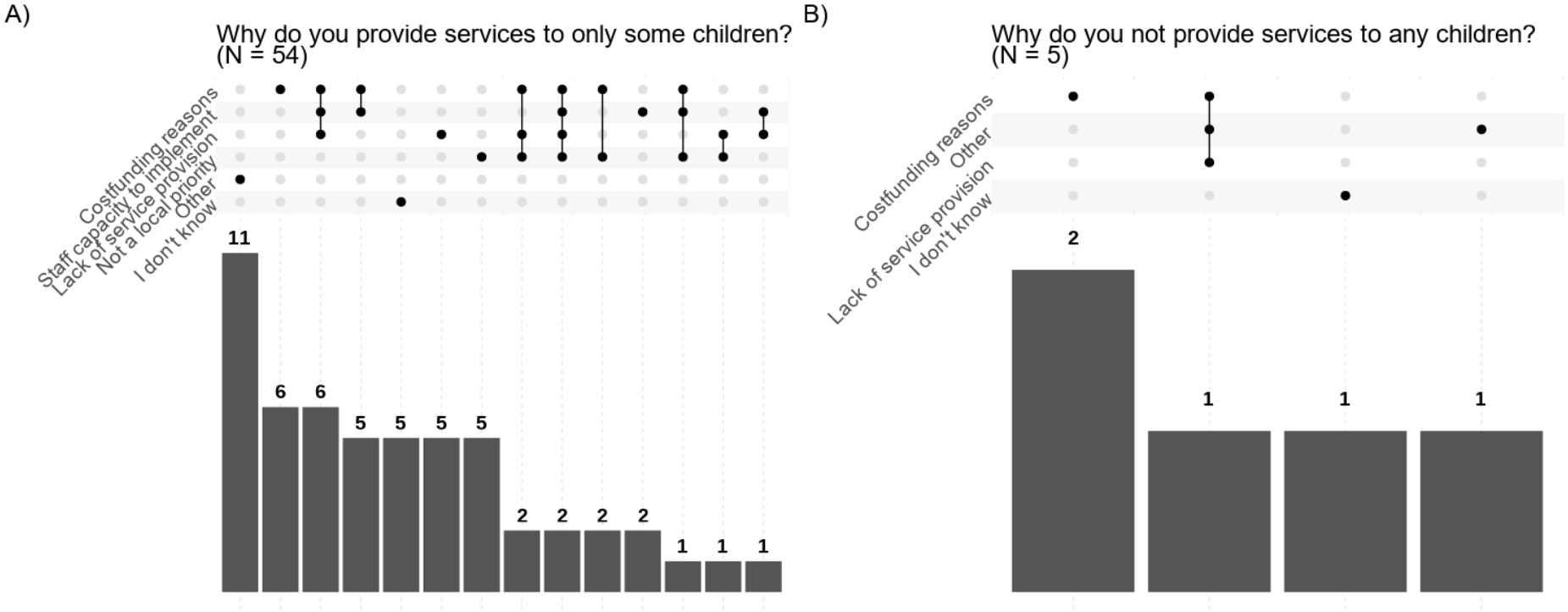


Figure 48: Services Available at the LGA

3.1.5 Regional differences

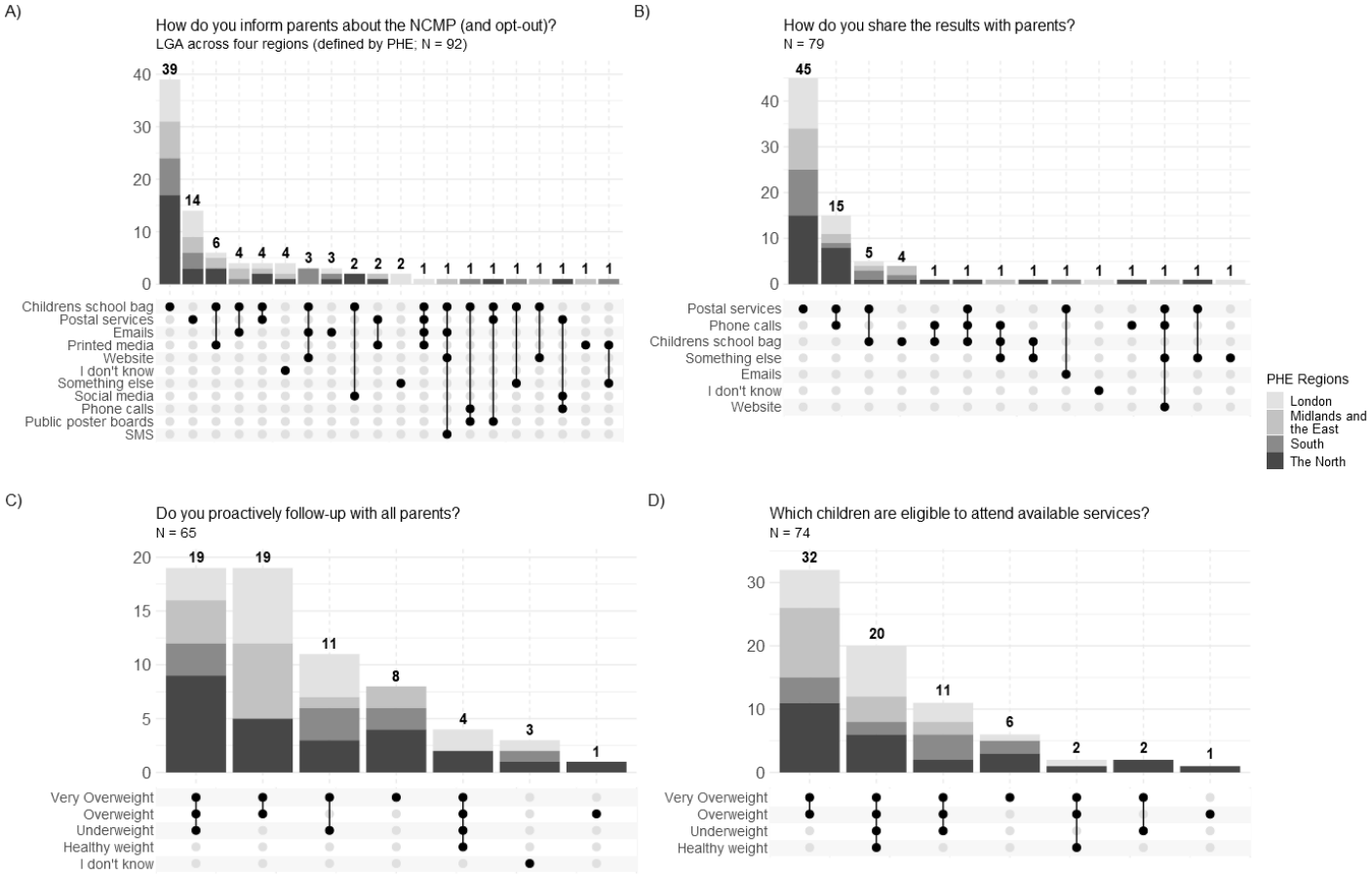


Figure 49: Regional Differences across the NCMP

3.2 Study 1 – Genre Analysis

3.2.1 Move 01 - Opening phrases

The first move contained units that usually occurred at the beginning of the letters. These were used to start the letter, address the reader, frame the topic of the letter, and prepare the reader for the results. The move rarely co-occurred with other moves. It had the unique purpose of introducing the content.

Six strategies were utilised as a part of this move. They were providing a reference frame to the reader. For example, by referencing previous consent, the reader was provided with a sense of continuity.

3.2.1.1 Acknowledging participation

This strategy occurred at the beginning of the letters and fulfilled move 01 by recognizing parent(s) for participating in the NCMP initiative. The strategy reflected an assumption that the parent was conscious of participating and played an active role in the programme; it was an assumption because, in most cases, parents were enrolled in the programme by default option.

Whilst coding, the strategy revolved around the keywords such as “Thank you for taking part...”. An example of the move is the following quote.

> Thank you for taking part in the National Child Measurement Programme at <School_Name>. The school nurse team measured <FirstName>'s height and weight on <DateOfMeasurement>. (UW letter)

There were no major differences between any of the letters. The strategy was also relatively rare as it occurred (this was the information presented in the codebook under the column “References”) only five times.

3.2.1.2 Future in the past

Another rare strategy referenced only nine times was mentioning the pre-measurement letter (in the past) and typically took the form of present perfect continuous tense. At the same time, it may have mentioned opt-out information and prepared the reader for “bad” news. The strategy assumed that the reader “should have been” (a possibility to write again was mentioned) aware that they would be contacted.

The strategy seemed to revolve around the keywords such as “we would contact you” or “we would write to you”. The following example illustrates the use of the strategy,

> We said we would write to you again if your child’s weight appears to be above or below the healthy weight range for their age. (VOW letter)

There were no significant differences across the letter versions.

3.2.1.3 Rationalizing the letter and the NCMP

The following strategy was referenced 268 times and presented the reader with reasons describing why the NCMP was conducted. It usually mentioned elements of the programme and provided a rationale for sending the letter. This strategy was “defensive” because the writer aimed to mitigate why the reader should be interested in the letter. Particularly the phrase starting with “Seeing if a child’s…” was a standard across many of the letters. Thus,

the phrase mentioned above was the keyword identified when coding. The following examples illustrate how the strategy occurred within the letters:

> Seeing if your child's weight is within the healthy range for their age, sex and height can help you make informed choices about their lifestyle. (HW letter)
>
> Knowing if your child's weight is within the healthy range for their age, sex and height can help you make informed choices about their lifestyle. (VOW letter)
>
> The National Child Measurement Programme collects information from across the country to help develop a better understanding of children's weight and develop services that can support children and parents in choosing or maintaining a healthier lifestyle. (COMB letter)

As shown in the first two examples, the strategy provided a rationale that parents were enabled to see whether their child was or was not in the healthy range. This was the most common form of the strategy, but as the last example illustrates, some writers appealed to a broader perspective, such as that the NCMP improved services and collected essential statistics. Nevertheless, the strategy did not differ across the results of the letter.

3.2.1.4 Reference the measurement and the letters

Another common strategy referenced 275 times opened the letter by prompting the reader to recall the events of pre-measurement letters and/or measurement at a school. The strategy directed parents/readers to a point of reference in past that their child was measured, or a letter about the measurement was sent beforehand (premeasurement). This allowed the reader to connect the result letter they were reading to some event in the past.

Common keywords identified were "We recently sent you a letter about measuring...", "Consent", "Thank you", "Measured your child…". The following examples illustrate the utilisation of the strategy,

> We recently sent you a letter about measuring Ian's height and weight in school as part of the National Child Measurement Programme. The measurements have now been taken, and the results are below. (HW letter)
>
> We sent you a letter about measuring «FirstName»'s height and weight in school. (VOW letter)
>
> A letter about this was sent to you before the measurements were taken. Your child's results are shown below. (COMB letter)

There were no differences between how the strategy was used in different results. Therefore, the strategy was usually a plain statement. It is also essential to state that the previous strategy and this strategy were usually occurring in the same letter. Hence, the opening provided rationale (previous strategy) and some reference (this strategy).

3.2.1.5 Reference the measurement only

A statement about the measurement alone was used on only four occasions. This was utilising the exact keywords but came across as rather blunt, as illustrated in the following example,

> As part of the National Child Measurement Programme, we recently measured your child's height and weight in school. (COMB letter)

This was different from the previous strategy and arguably may have caused some confusion if the reader skimmed through the letter and read this sentence first. For example, the reader could be asking “Why?” was their child measurement and then had to search for further details in the letter for the rationale.

3.2.1.6 Underline past consent to the measurement

The final strategy within the first move referred to the opt-out option for parents. The opt-in was the default option in the NCMP. The strategy was built on the notion that parents provided consent, but similarly to strategy 1.1, and it assumed that the consent was provided intentionally. This could be problematic as a default opt-in scenario could mean that not all parents made a conscious decision about their participation.

The strategy was referenced 15 times and usually occurred using keywords such as “did not opt-out”, “your consent”, “you requested”. The reference to opt-out made it particularly easy to identify. The following examples show how the strategy was utilised,

> You are receiving this letter as you requested to be informed of your child’s height and weight. (COMB letter)
>
> Thank you for agreeing for Joe to take part in this year’s National Child Measurement Programme (NCMP). This has now been done, and Joe’s results are summarised below: (OW letter)

In both cases, the reader was directly informed that they agreed or even requested the feedback because they did not opt-out.

3.2.2 Move 02 – Sharing Results

The following content relates to selected codes from Move 02.

3.2.2.1 Providing visuals guides graphs (visual element)

This is an example from a combined letter, and it was initially presented vertically. Rather than colours, grayscale was used alongside the different centiles (which was not apparent from the previous visual).

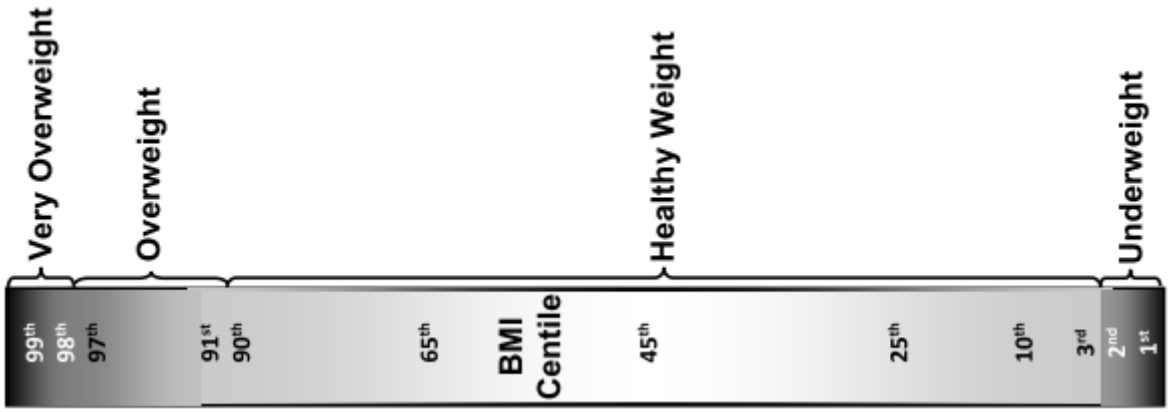


Figure 50: Example of Visuals, Guides, Graphs

(COMB letter)

The following fulfilled the role of a table than visual. The presentation showed the centiles as rough proportions in the population.

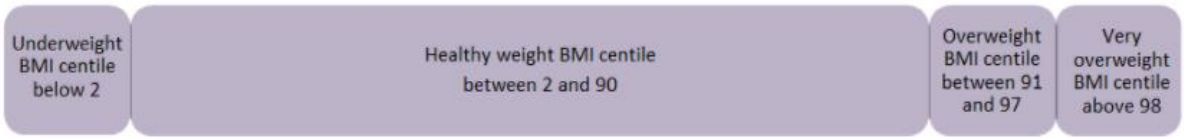


Figure 51: Example of Visuals, Guides, Graphs

(HW letter)

The following seemed to be a chart taken from the children's red book and repurposed for the NCMP result letter. The advantage was that visuals could be something familiar to parents. However, it was fairly technical visual taking a lot of space.

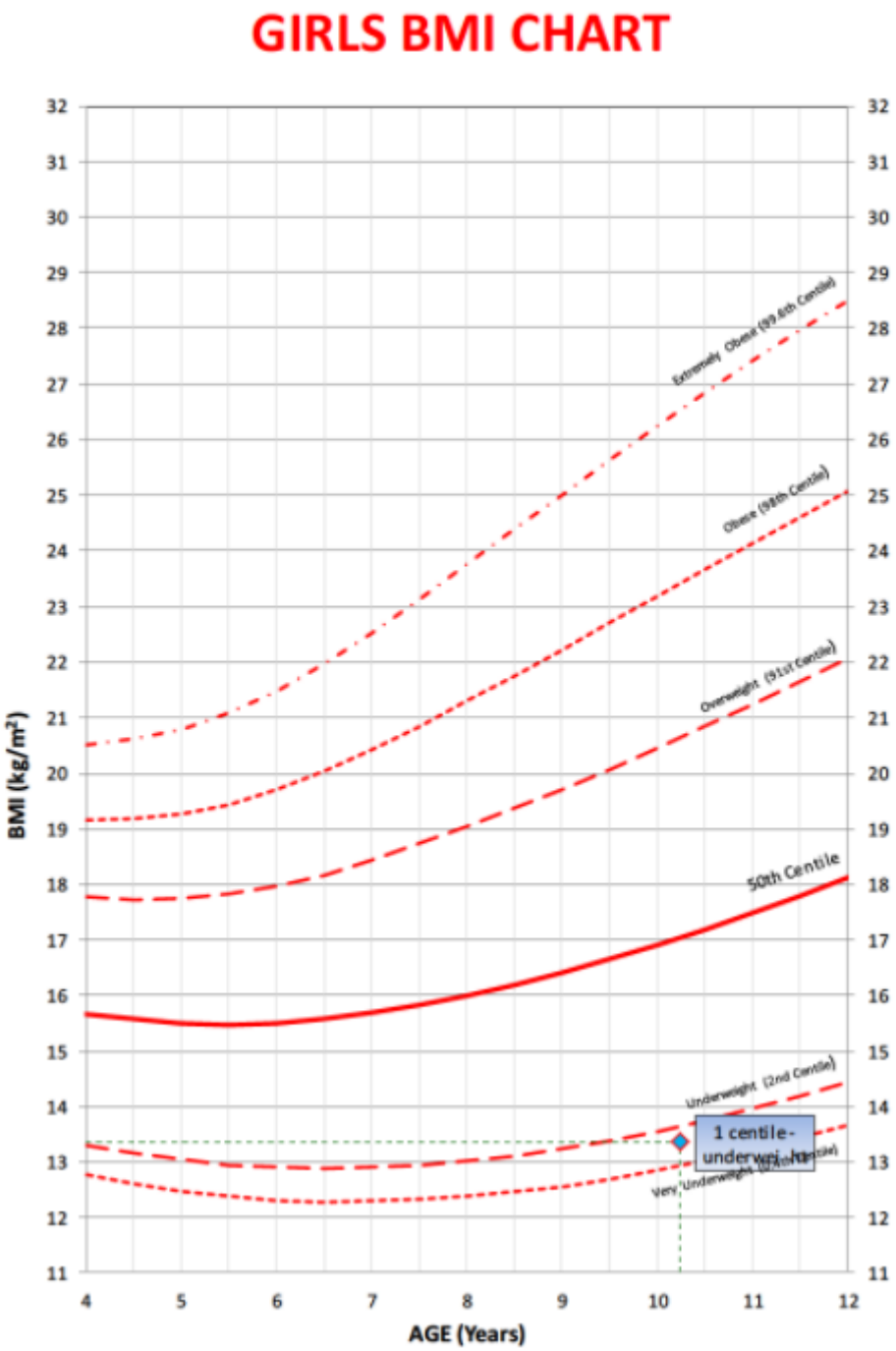
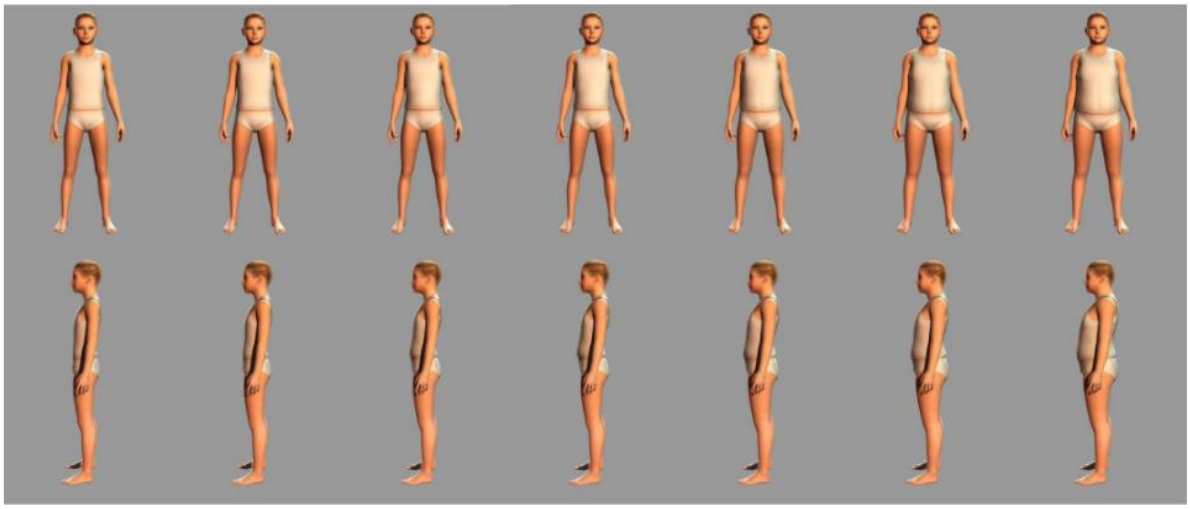


Figure 52: Example of Visuals, Guides, Graphs

(UW letter)

Finally, the most unique visual came from a tool called “Map Me” (Jones et al., 2018). The tool was developed to help parents guide their assessment of a child’s weight. It was utilised only in some letters (likely from LGAs that participated in the MapMe trials) and offered visuals for boys and girls for both the reception and Year 6. Similarly to the previous visual, the image would cover a large proportion of the letter.

Below is the **Map Me tool** which relates to children of the same gender and age as your child. We have provided both a front and side view for each image. The small differences between the weight categories are surprising but real. The images help us to see the small changes which can happen over time and lead to children being overweight.



Underweight **Healthy weight** **Healthy weight** **Healthy weight** **Overweight** **Very overweight** **Very overweight**

Figure 53: Example of Visuals, Guides, Graphs

(OW letter)

3.2.2.2 Table Alternative (visual element)

The following tables were extracted from letters that provided an alternative to the NCMP letter templates developed by PHE. Any tables that deviated from the templates were considered an alternative. The visuals are provided without any further comments.

Your child's results:

Date measured	Date of Birth	Height	Weight	Body-mass index centile
«DateofMeasurement»	«DateofBirth»	«Height»cm	«Weight»kgs	«PScore» (see chart below)

Figure 54: Example of Visuals, Guides, Graphs

(COMB letter)

YOUR CHILD'S RESULTS	
Date measured:	07/02/2018
Date of Birth:	25/08/2007
Height:	134.9cm
Weight:	28.1kg
BMI centile:	12.0

Figure 55: Example of Visuals, Guides, Graphs

(COMB letter)

Child's name results	
Height (cm)	cm
Weight (kg)	kg
Date of measurement	Date
Date of Birth	DOB
School	school

Figure 56: Example of Visuals, Guides, Graphs

(HW letter)

Joe's results			
Height:	XXcm	/	XX feet, XX inches
Weight:	XXkg	/	XX stone XX pounds
Body Mass Index (BMI) percentile:			1
Measurement date:			5th May 2016

Figure 57: Example of Visuals, Guides, Graphs

(OW letter)

<Patient name>'s results	
Height (cm)	<Numerics>
Weight (kg)	<Numerics>

Figure 58: Example of Visuals, Guides, Graphs

(VOW letter)

3.2.3 Move 05 - Ensuring privacy

Moves 05 and 06 had no strategies because they varied little across the letters. At the same time, they were unique and important enough to be defined as two separate moves rather than a strategy under one of the previous moves.

Move 05 was a common move (referenced 278 across 263 letters) that typically occurred near the end of the letter and aimed to assert that the reader can rest assured that all information in the letter was treated confidentially. The move occasionally co-occurred with the Move 02 and featured keywords such as "Confidentiality", "not been shared", "sensitive". The following

examples illustrate the utilisation of the move – as is seen below, the move was standardised across different versions,

> This information has not been shared with <FirstName>, other children or school staff. Locally, this information is held by your local authority and is treated confidentially. (COMB letter)
>
> This information has not been shared with NAME, other children, or school staff. (HW letter)
>
> This information has not been shared with your child or school staff. Locally, this information is held by the NAME School Nursing Service and the London Borough of NAME Public Health Team and is treated confidentially. (UW letter)
>
> Why weight MK are a specialist weight management service commissioned by Public Health, they adhere to data handling policies and provide secure and confidential advice. (OW letter)
>
> This information has NOT been shared with your child, other children, or school staff. Locally, this information is held by your NAME NHS Trust Public Health Nursing Team and is treated confidentially. (VOW letter)

3.2.4 Move 06 - Conclude with pleasantries

The final move was typically the last but could co-occur with Move 04. Usually, the move expressed leave-taking and thanked the reader. The move was common (referenced 223 times).

Since the move varied little across the letters, it is unnecessary to feature many examples as they were all nearly identical. It used keywords such as “Thank you for reading this letter…” or “We hope this was useful…”.

The following example illustrates the move utilisation.

> Thank you for reading this letter - we hope this information is useful to you. (OW letter)

The move felt obligatory in the sense that it was used to close the letter. However, in some instances, attachments followed on the other page (e.g., C4L), and since the move did not occur in 26% of letters in the corpus, it was decided to consider it optional.

3.3 Study 1 – Quantitative Text Analysis

3.3.1 Preparing Corpus and Corpus Description

The total sample included 300 letters extracted from NVivo Pro v12 and converted into a corpus using R package quanteda version 2.0, further tokenised, and converted into a sparse document-feature matrix (DFM) (Benoit et al., 2018; Watanabe & Müller, 2019).

The ungrouped DFM consisted of 3736 documents, 2682 features (99.5% sparse) and five-column variables. There were this many documents because each document represented a specific move, strategy, and letter type. For example, one such “document” was labelled as “*01 Opening phrases HW vanud-bilop*” (vanud-bilop was a unique readable ID given to each document). To put it differently, if the DFM was grouped by letter category and LGA name, the returning matrix resulted in 300 documents equal to the number of actual letters collected from the LGAs.

Three figures supplied in the current section (Appendix 3.3.1) represent the frequency distributions as simple univariate bar plots and as bar plots separated by the letter category. Figure 59 in Appendix 3.3.1 refer to the frequencies of moves, while Figure 60 in Appendix 3.3.1 and Figure 61 in Appendix 3.3.1 refer to frequencies of strategies, and structural elements, respectively.

The relative frequency presented as a percentage of moves across all 3736 documents (or moves in this scenario) were 01 Opening phrases 15% (574), 02 Sharing results 24% (906), 03 Educating and informing audience 19% (698), 04 Appeal to action or change 28% (1053), 05 Ensuring privacy 8% (282), and 06 Conclude with pleasantries 6% (223).

Other tables in Appendix 3.3.1 show the occurrence of each move and strategy (Table 4) and structural element (Table 5) within the corpus once it was entered in R version 4.0.3. Please note that the occurrence presented in the tables slightly varies from the original number of references and files presented in Section 3.5.2 (Main text). This is due to the differences between how NVivo and R counted occurrences.

The final Figure 62 in Appendix 3.3.1 of this section shows the log frequency of the top 150 tokens. This is a valuable way of visualising the most common words throughout the corpus irrespective of any other groupings (e.g., grouping by the type of letter).

Table 4: Moves and Strategies of the Letters

Move	Strategy	Total
01 Opening phrases	Acknowledging participation	5
01 Opening phrases	Future in the past	9
01 Opening phrases	Rationalizing the letter and the NCMP	266
01 Opening phrases	Reference the measurement and the letters	275
01 Opening phrases	Reference the measurement only	4
01 Opening phrases	Underline past consent to the measurement	15
02 Sharing results	Acknowledging limitations of the feedback	212
02 Sharing results	Concealed condition	20
02 Sharing results	Good news healthy weight framing	5
02 Sharing results	Providing visuals guides graphs	48
02 Sharing results	Sharing with children	56
02 Sharing results	Table Alternative	86
02 Sharing results	Table Specimen 2014 17	182
02 Sharing results	Table Specimen 2018	20
02 Sharing results	Written results statement	277
03 Educating and informing audience	Comparing children	18
03 Educating and informing audience	Compute the BMI yourself	259
03 Educating and informing audience	Context of environment	7
03 Educating and informing audience	Context of health	320
03 Educating and informing audience	Context of stigma	5
03 Educating and informing audience	Explaining measurement method	89
04 Appeal to action or change	Change is simple argument	136
04 Appeal to action or change	Give us feedback	16
04 Appeal to action or change	Instructions as directives and obligations	229
04 Appeal to action or change	Instructions as suggestions and possibilities	474
04 Appeal to action or change	Opted in by default	56
04 Appeal to action or change	Peer pressure	22
04 Appeal to action or change	Referring service	120
05 Ensuring privacy	None	282
06 Conclude with pleasantries	None	223

Table 5: Structural Elements of the Letters

Move	Strategy	Total
07 Structural	Addressee	295
07 Structural	Date	268
07 Structural	Logo	344
07 Structural	NHS number	174
07 Structural	Private confidential statement	262
07 Structural	Salutation end	289
07 Structural	Salutation start	300
07 Structural	School reference	27
07 Structural	Sender	320
07 Structural	Signature sender	306
07 Structural	Structural DOB	4
07 Structural	Title	33

Three figures 59, 60, and 61 supplied below represent the frequency distributions as simple univariate bar plots and as bar plots separated by the letter category.

Figure 62 shows the log frequency of the top 150 tokens to show the occurrence of the words (tokens) across the entire corpus.

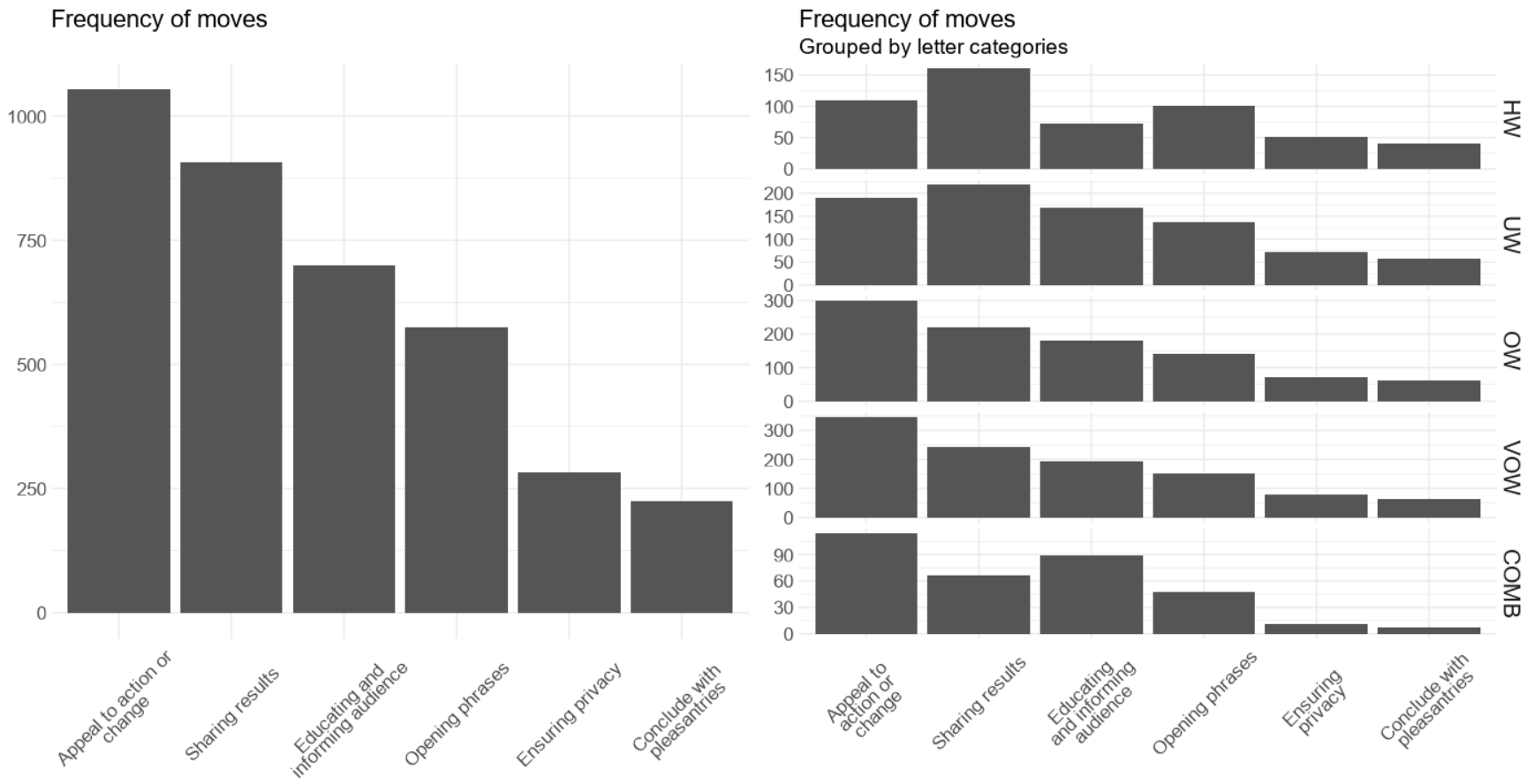


Figure 59: Frequency of Moves

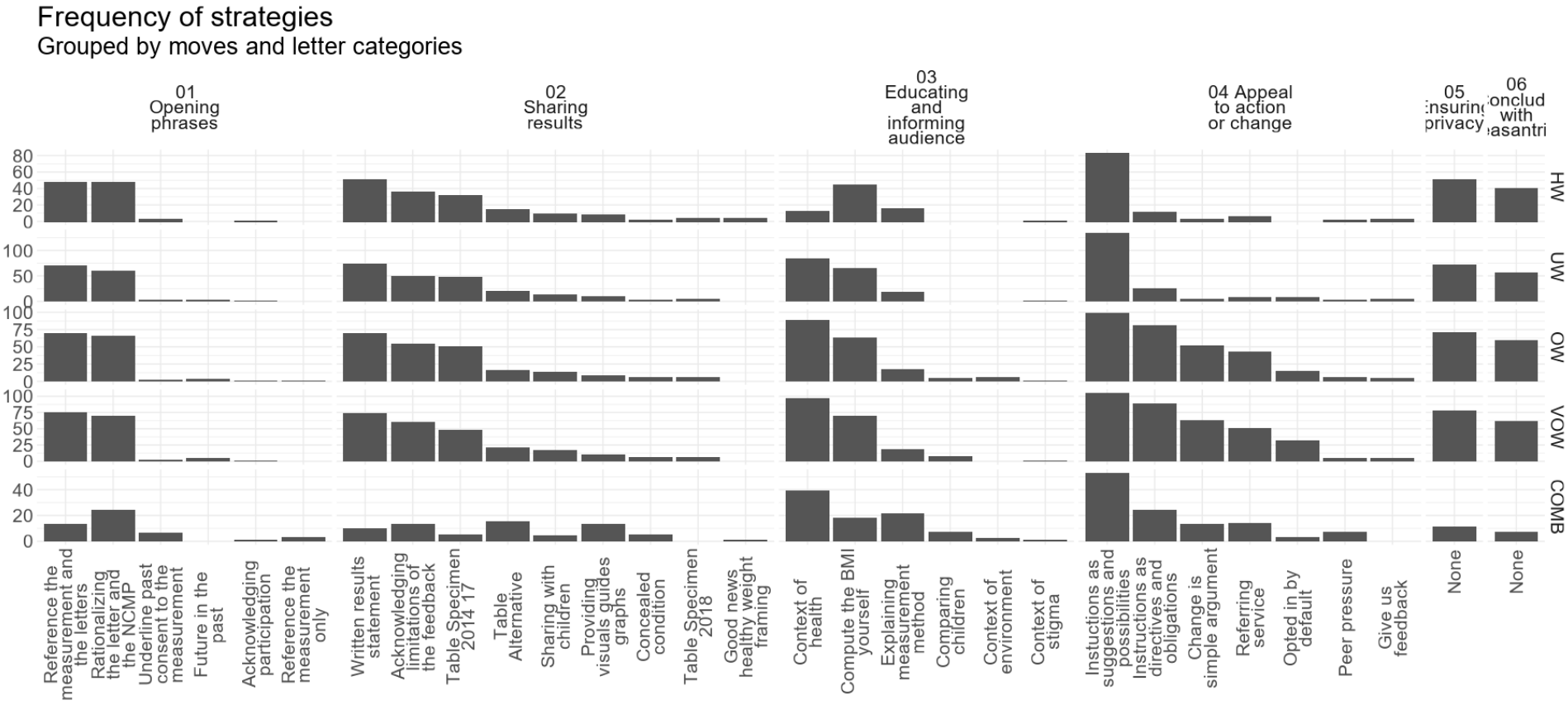


Figure 60: Frequency of Strategies

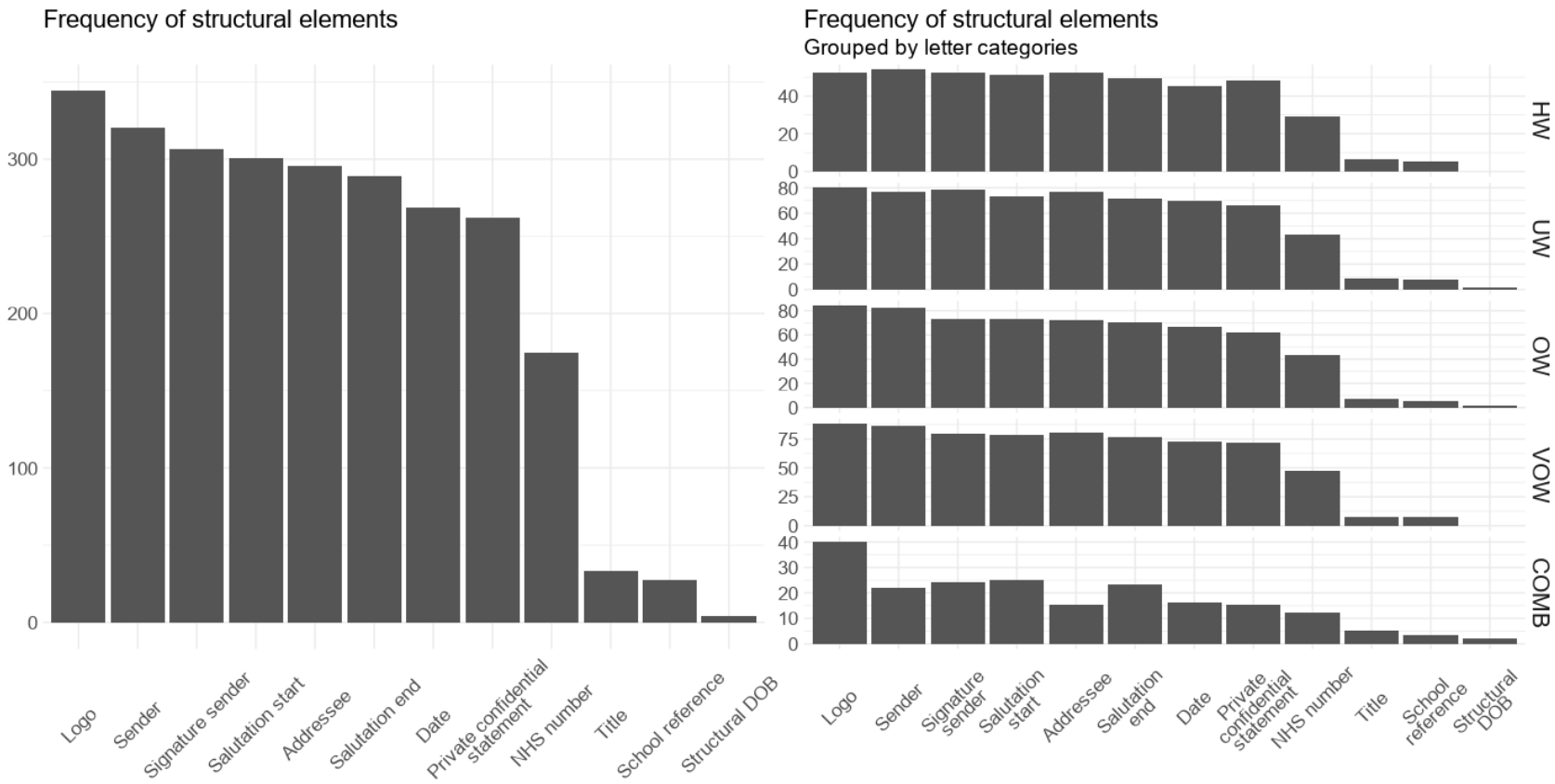


Figure 61: Frequency of Structural Elements

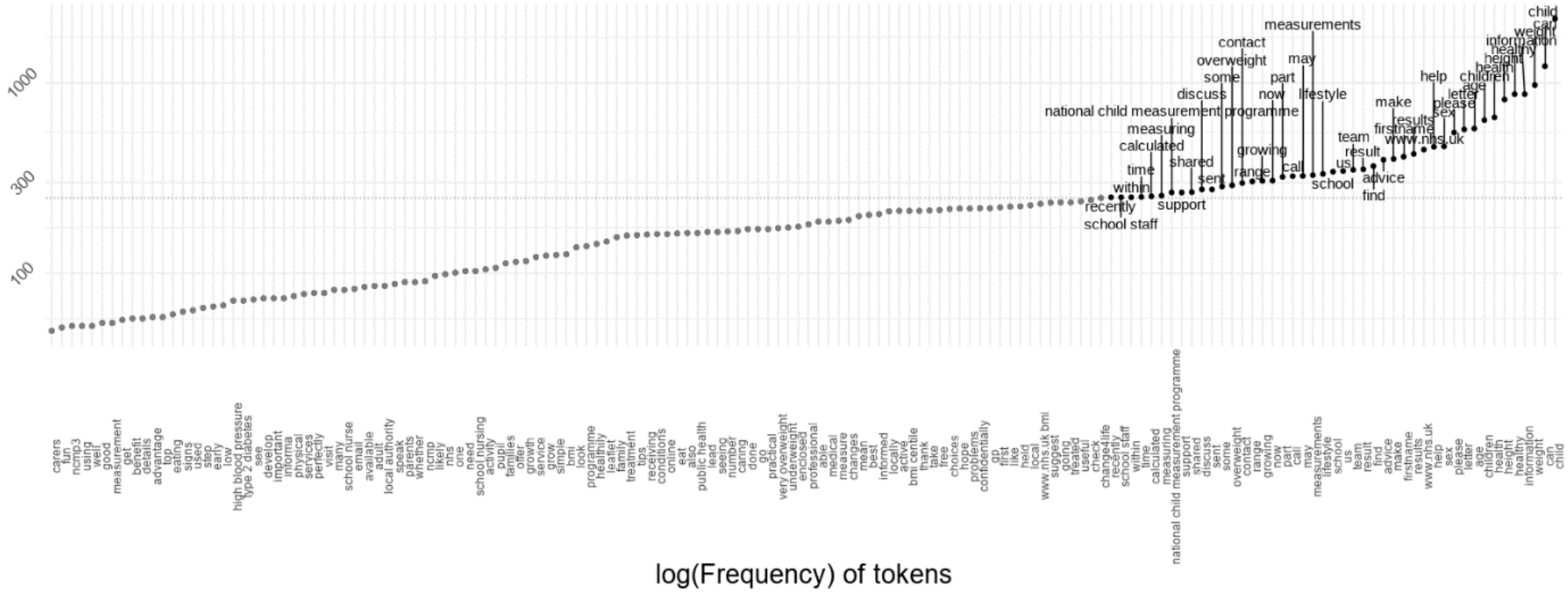


Figure 62: Log of Frequency of Tokens

3.3.2 Figures for Lexical Diversity, Keyness, and Sentiment

3.3.2.1 Lexical diversity

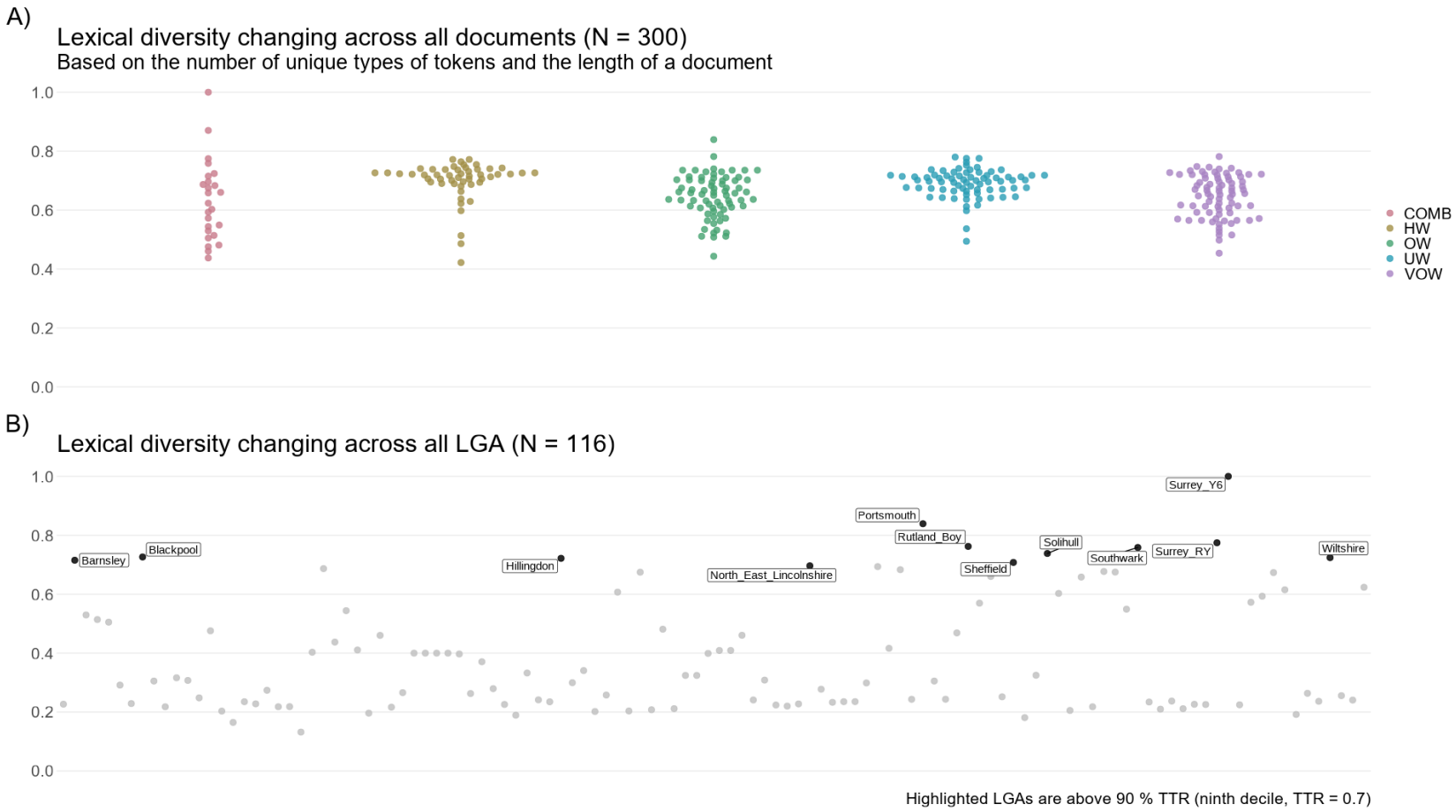


Figure 63: Lexical Diversity across Letters and LGAs

3.3.2.2 Keyness

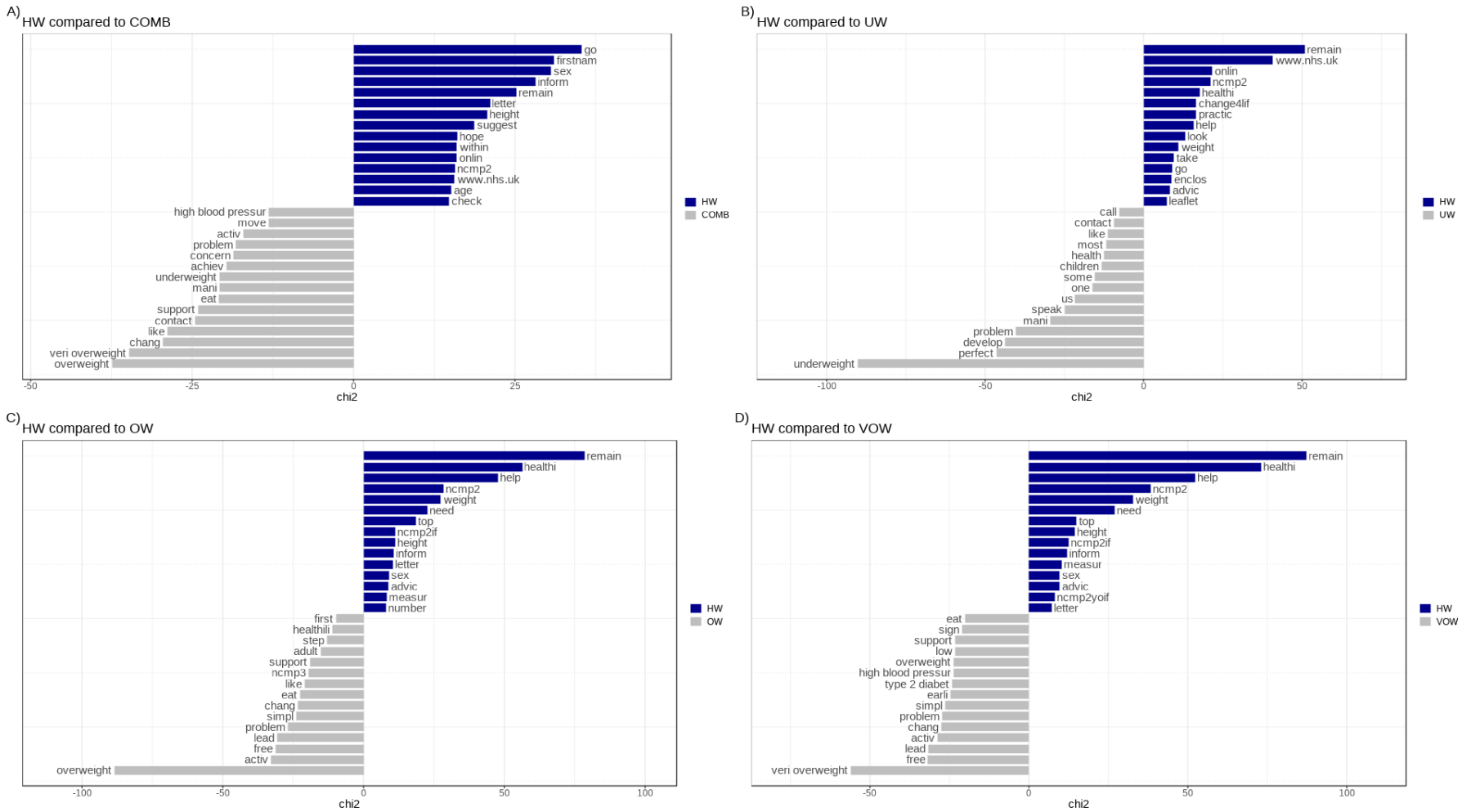


Figure 64: Keyness Analysis Comparing Types of Letters

3.3.2.3 Sentiment analysis

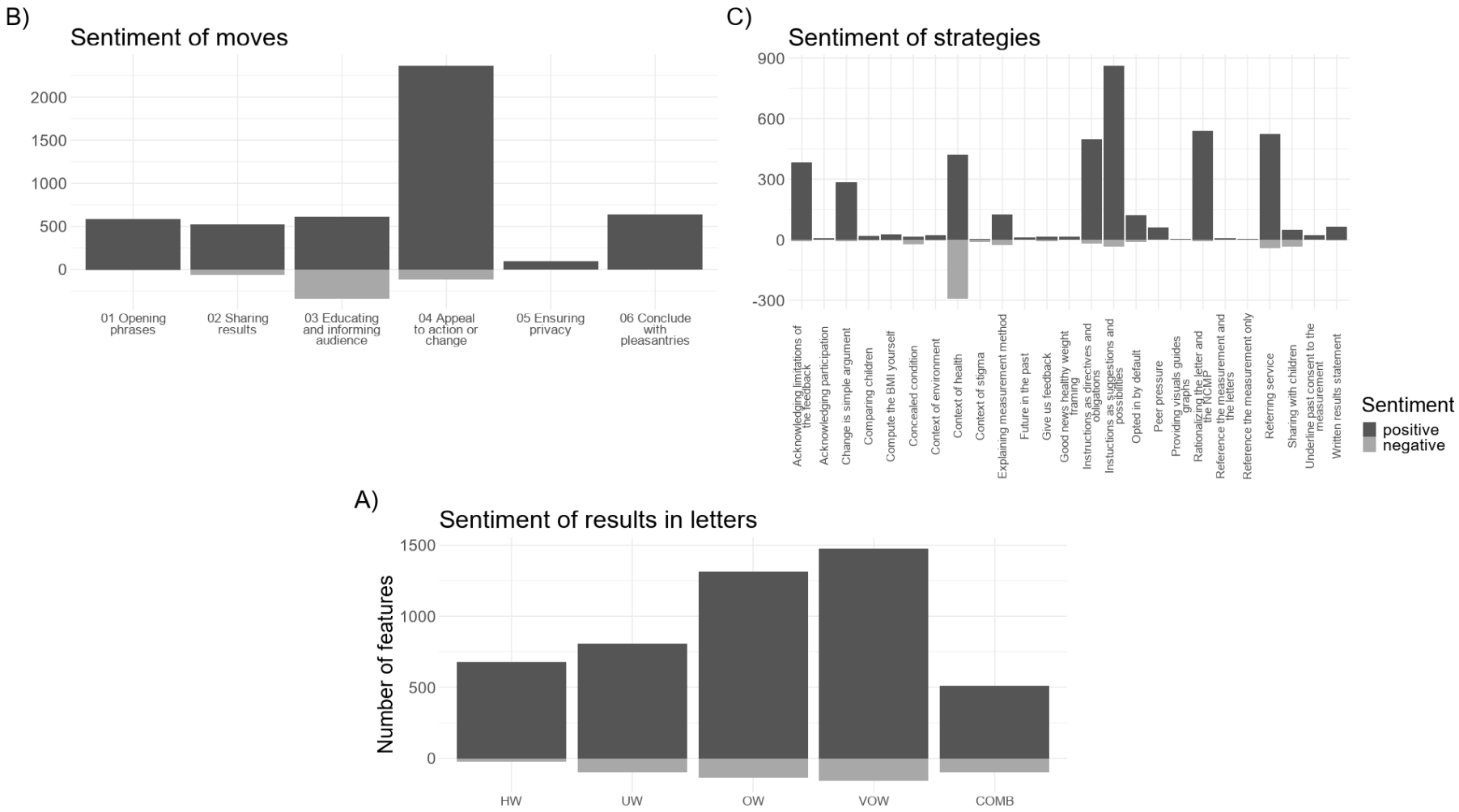


Figure 65: Sentiment Analysis

3.3.3 Describing the frequency of features

Figure 66 shows the plain frequency of the features within the matrix. Figure 67 narrows down the focus on weight versions and shows which features co-occur (feature co-occurrence matrix; FCM) together in each version.

3.3.3.1 Frequency of features

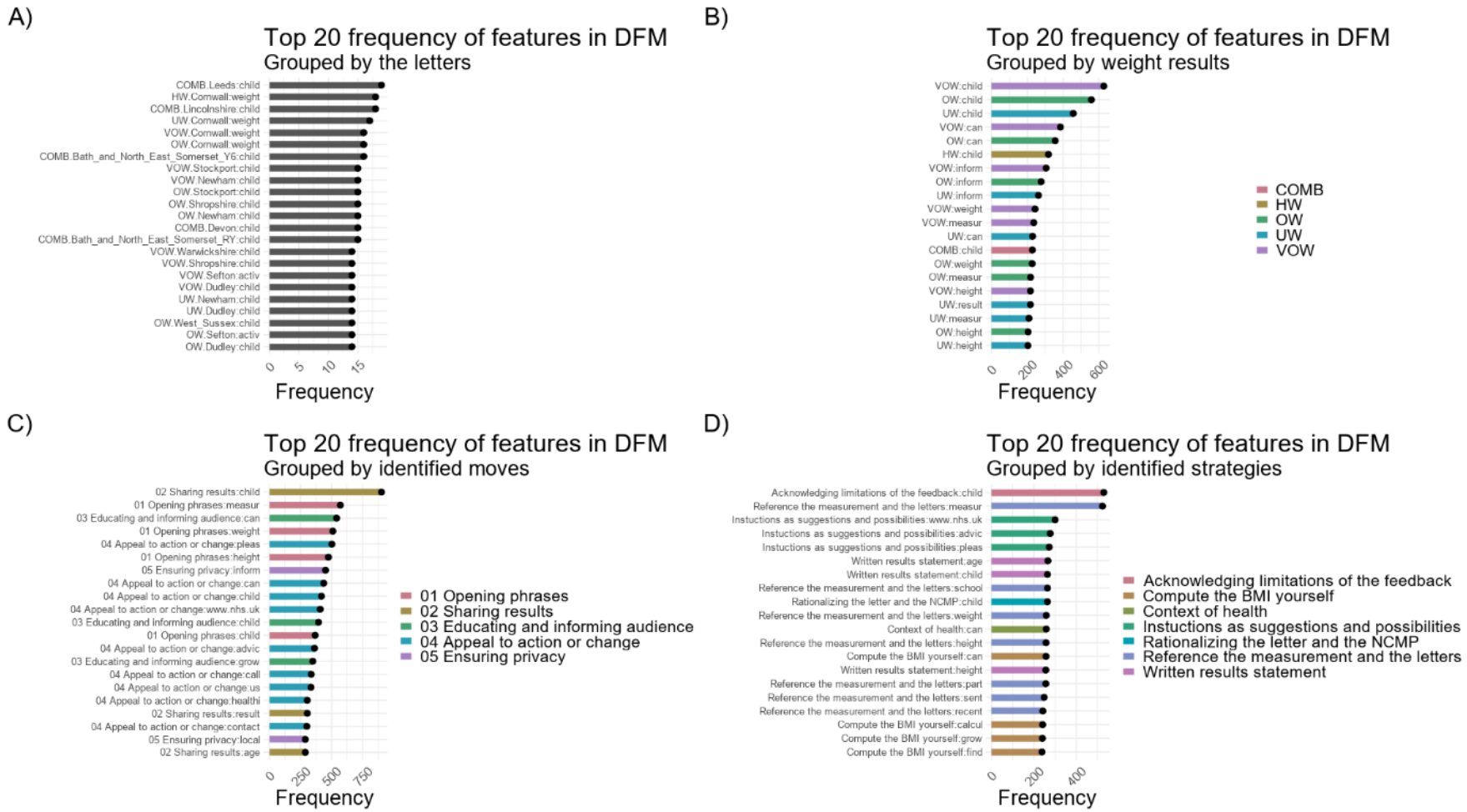


Figure 66: Frequency of Top Features

3.3.3.2 Feature co-occurrence matrix

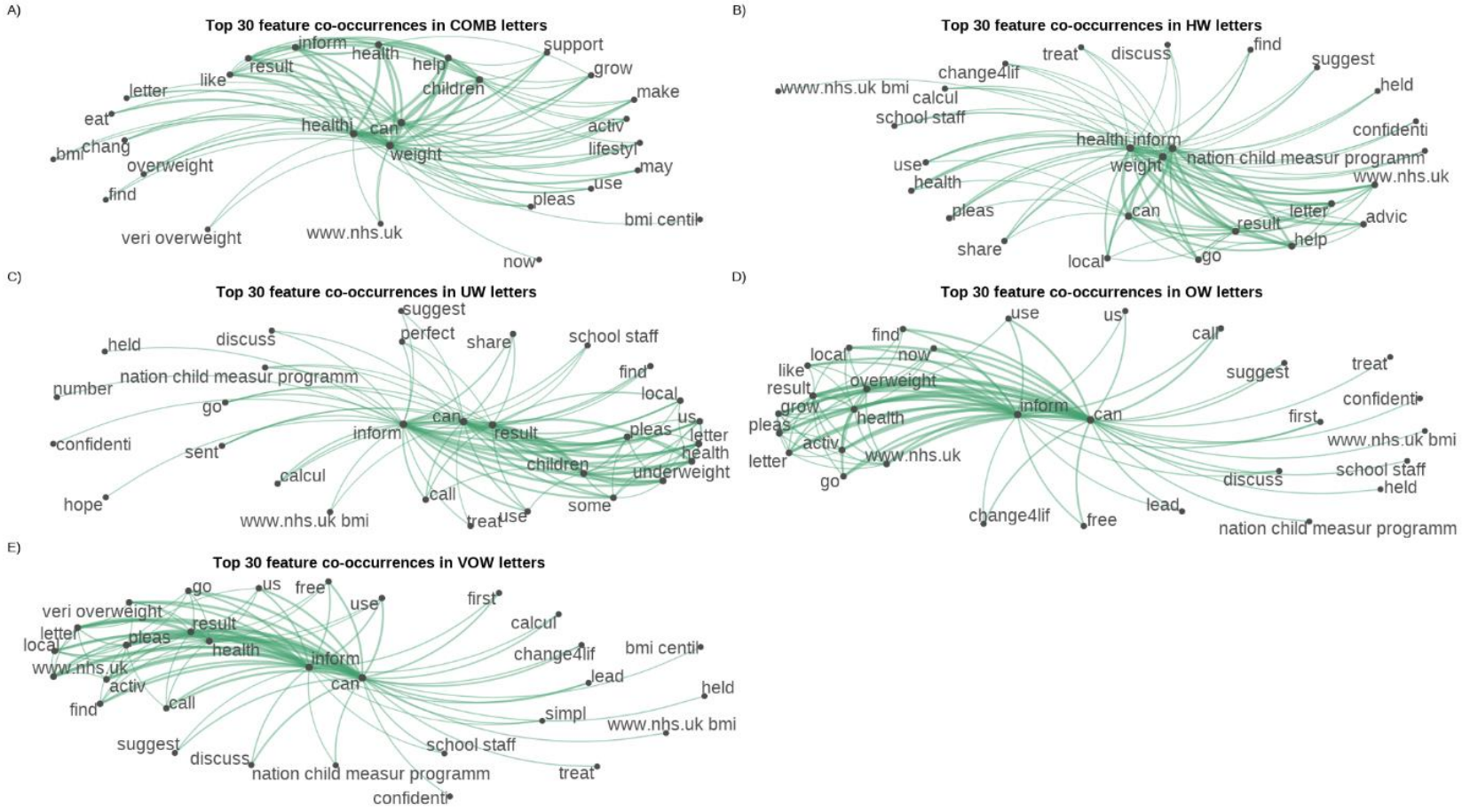


Figure 67: Feature Co-Occurrences across the Letter Categories

3.3.4 Hierarchical clustering algorithm

Continuing the quantitative text analysis, hierarchical clustering based on Euclidian distance (Pythagorean metric) and complete (maximum) linkage criterion was conducted (Jockers & Thalken, 2020). The document feature corpus was further trimmed to remove features that appear less than 2.5% and more than 97.5% in any given document. This ensured the clustering accounted for the common words and was less biased by rare but uncommon terms.

This analysis aimed to identify further groupings among the documents collected in the corpus using an algorithm-based approach and then qualitatively interpret the result. This allows extending the previous qualitative coding with artificial categories based on numerical parameters – frequency of features.

The first analytical step was determining the number of clusters to cut the hierarchical trees because partitioning methods require the user to specify the number of clusters. The utilised statistics to determine the number was the Gap statistics, and a method proposed by Tibshirani et al. was utilised (Kassambara & Mundt, 2020; Tibshirani et al., 2001).

Figure 68 shows that the optimal number of clusters for possible *k* set between 1 to 25 across 500 Monte Carlo simulations was determined as *k* = 1. This result indicates that the clustering may not be appropriate for the following dataset.

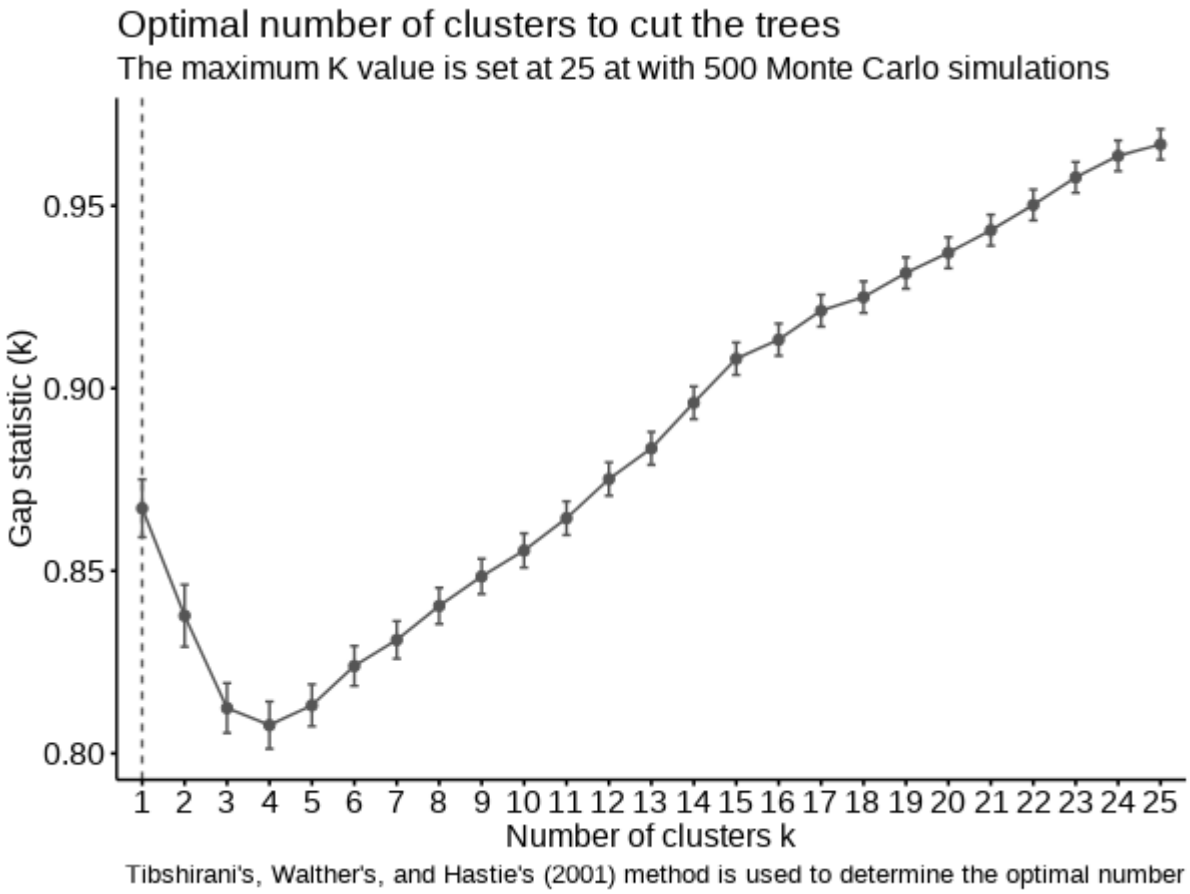


Figure 68: Determining the Optimal Number of Clusters

Hierarchical clustering has the advantage over other methods (e.g., k-means) as it allows to display the complete hierarchy of clusters rather than only a single layer. In this sense, it was

possible to visualise the resulting hierarchy even though the tree was not cut, as indicated by the results of the gap statistics.

The following visualisations show different views on the tree. As there was no cutting done, everything, in theory, belonged to a single cluster; however, it was still possible to see how different letters branched.

Figure 69 shows the entire tree displayed in two different layouts – circular and dendrogram. The challenge with a large number of observations was how to produce appropriate visualisations that allowed individual groupings to be visible. The following visualisations show different tree sections, thus overcoming the challenge as mentioned earlier.

Figure 70 shows the section visualising letters from 1 to 75 (one observation was a version of a letter provided by LGA), followed by sections 75 to 150 (Figure 71), 150 to 225 (Figure 72), and 225 to 300 (Figure 73; the maximum number of the letters/documents). Including Figure 69 displaying the full tree view, all of the “zoomed” tree partitions show also coloured nodes indicating which weight version of the letter is displayed.

The figures clearly show that where the clustering occurred, it happened based on the proximity (distance, similarity) of documents produced by the same LGA. For example, a closer look at the section of the tree plot (75 to 150) shows that Kingston Upon Thames, West Sussex, and Leicester letters formed small, separated clusters of letters for their LGAs. This pattern was evident across other sections as well; in other words, the letters were close to each other because they were produced by the same LGA. Nonetheless, a different pattern emerged in sections 150 to 225, where the colours clustered close to each other, indicating that some letters were closer to each other because of their result version rather than because of the LGA that produced the letter. To further illustrate this result, two examples in Figure 72 are shown from LGAs clustered close to each other based on the result (HW). These were the Havering and the Sunderland that were next to each other in sections 150 to 225 despite being produced by different LGAs – these letters also appear to closely follow the PHE standard from 2014 - 2017. Finally, Figure 74 shows an example of one of the letters that were in the sample and represent individual node in the dendrogram.

3.3.4.1 Full tree plot

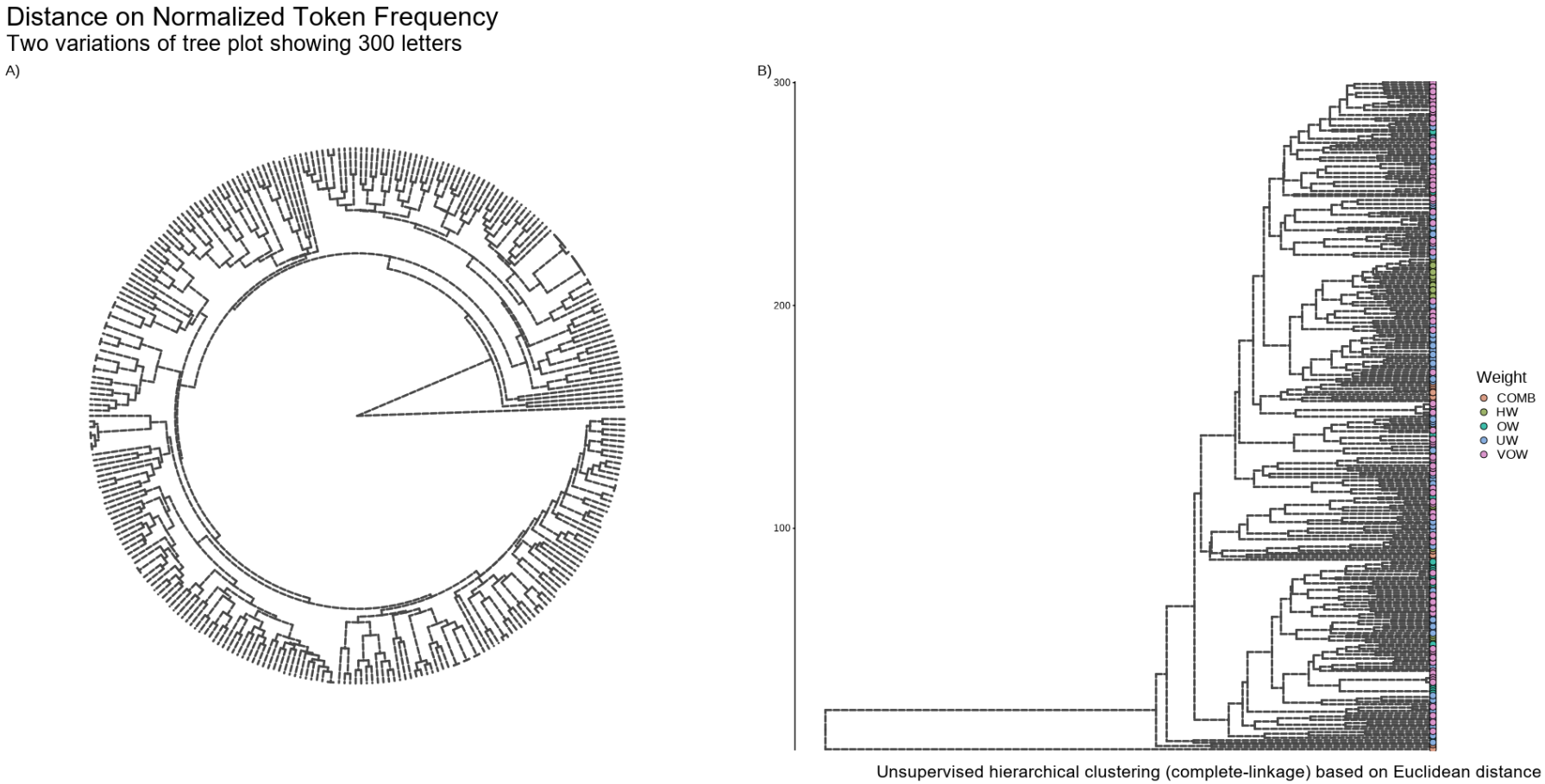


Figure 69: Full Dendrogram of Tokens in the Letter

3.3.4.2 Section of the tree plot (1 to 75)

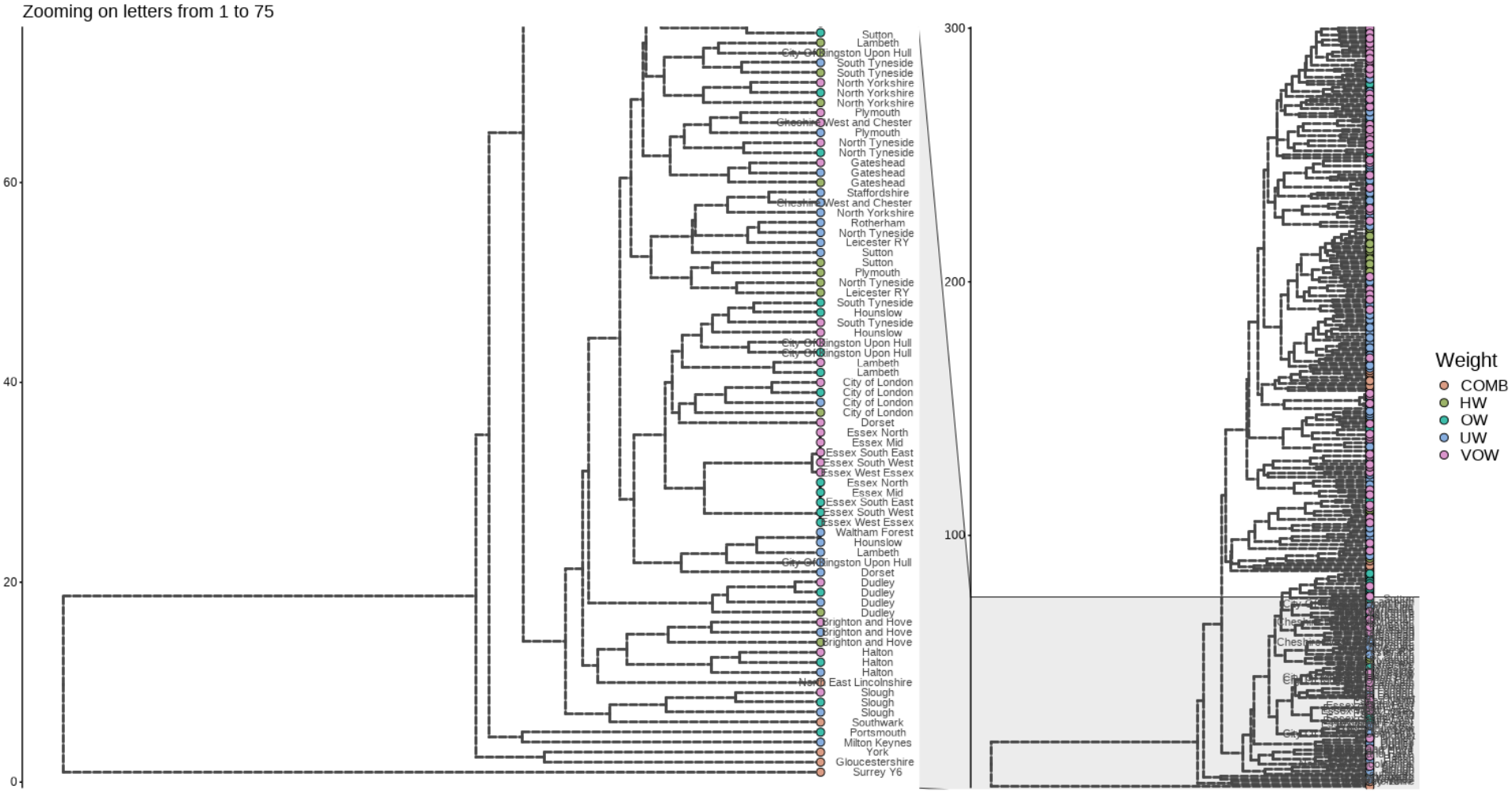


Figure 70: Partial Dendrogram of Tokens in the Letter (1 to 75)

3.3.4.3 Section of the tree plot (75 to 150)

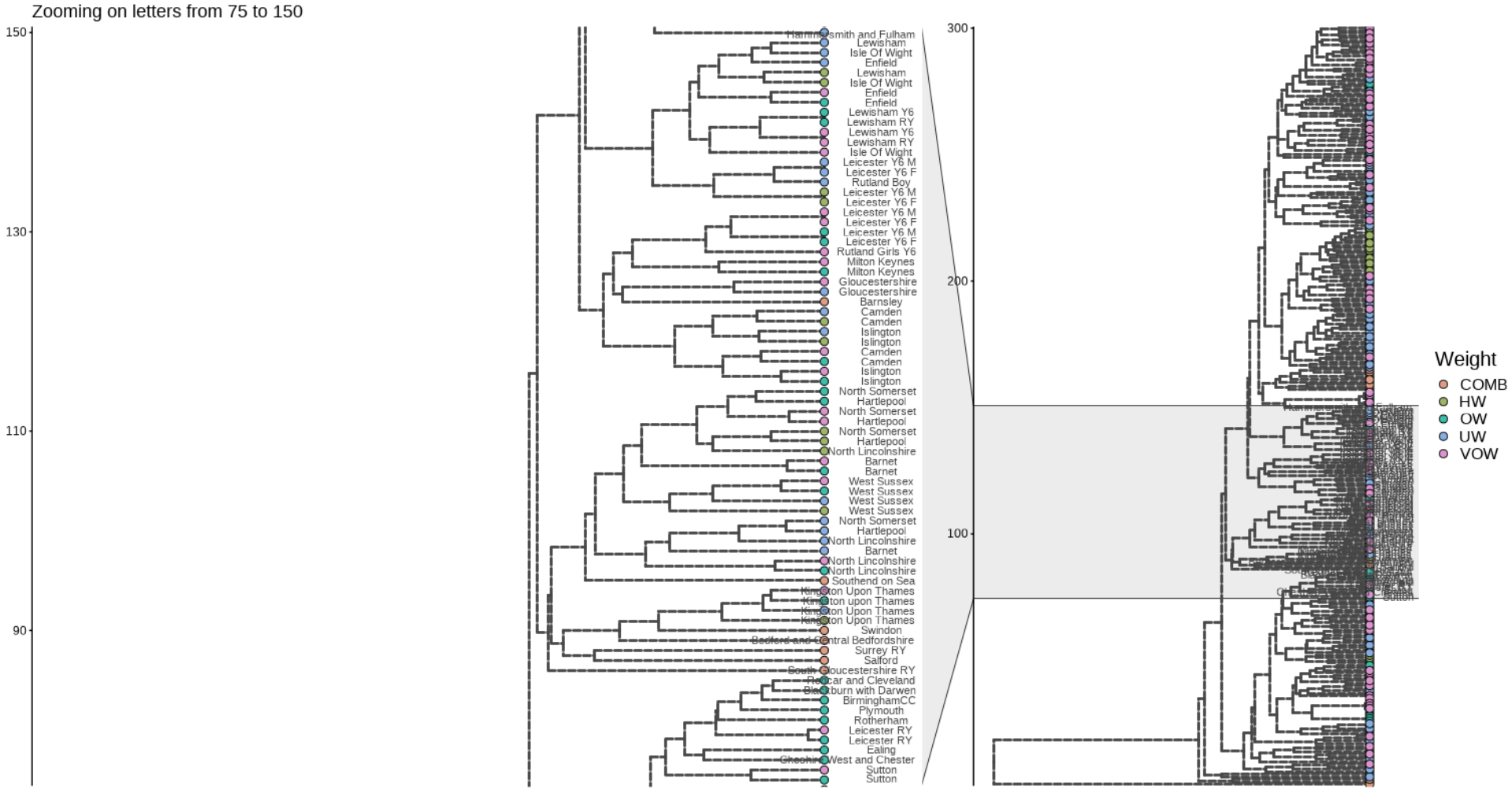


Figure 71: Partial Dendrogram of Tokens in the Letter (75 to 150)

3.3.4.4 Section of the tree plot (150 to 225)

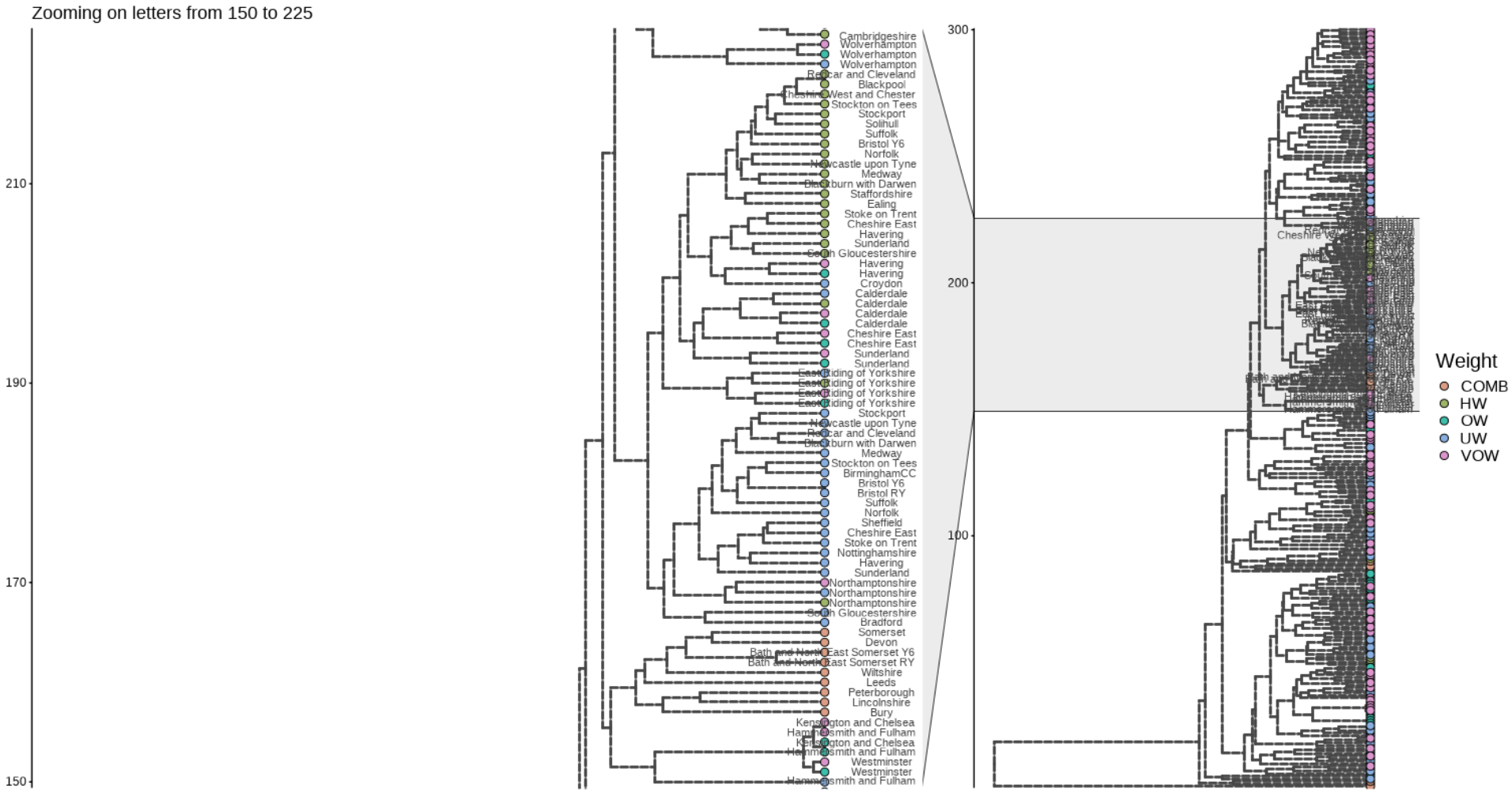


Figure 72: Partial Dendrogram of Tokens in the Letter (150 to 225)

3.3.4.5 Section of the tree plot (225 to 300)

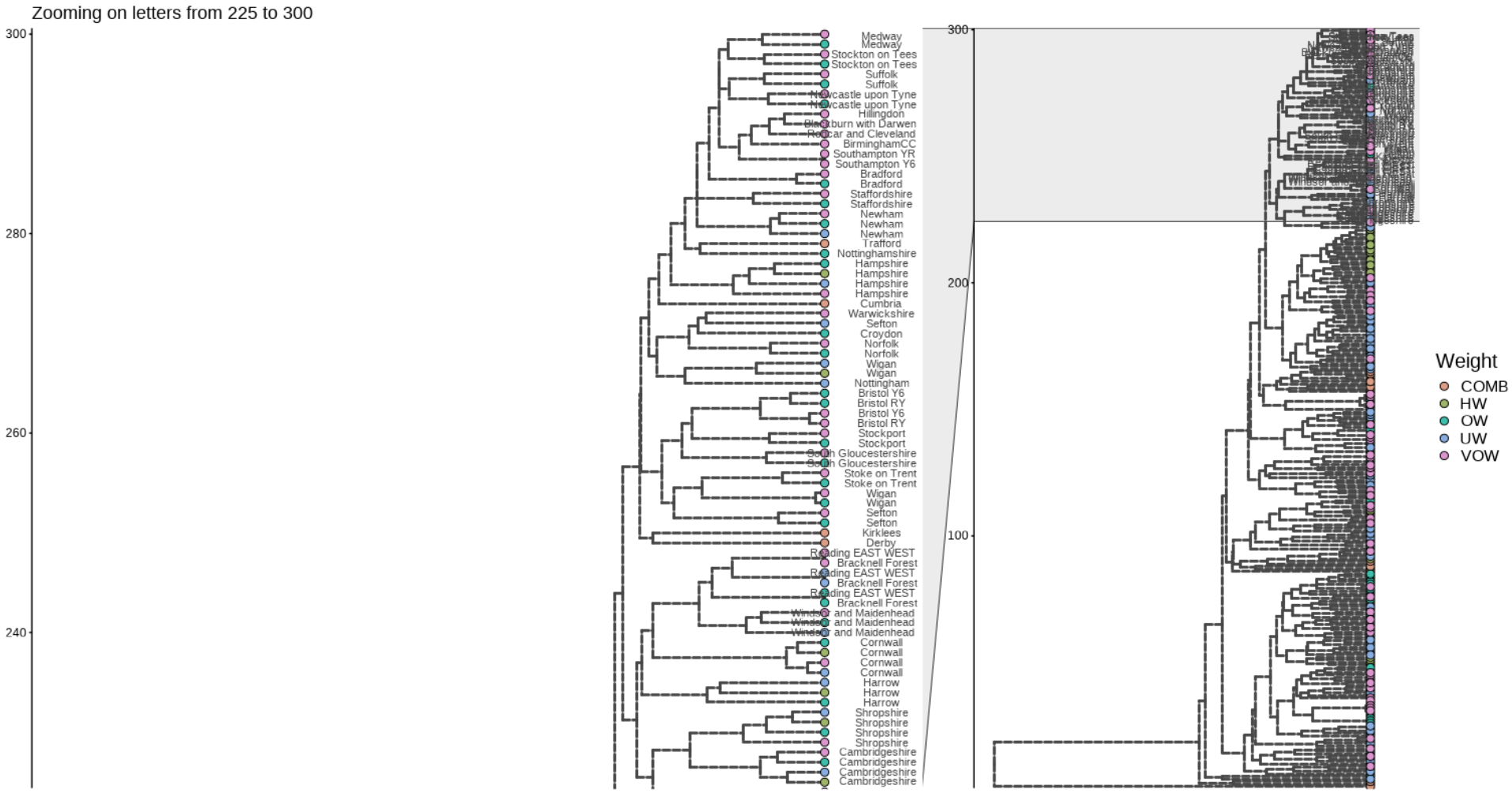


Figure 73: Partial Dendrogram of Tokens in the Letter (225 to 300)

Best care by the best people

NELFT NHS
NHS Foundation Trust

Private and confidential
Parent / Carer of «FirstName» «LastName»
«Address1»
«Address2»

«Address4»
«Address5»
«Postcode»

Havering School Health Team
Harold Hill Health Centre
Gooshays Drive
Harold Hill
Romford
RM3 9SU
Tel: 0300 300 1857
Email: nem-tr.haroldhillsn@nhs.net

01 August 2018

NHS number: «NHSNumber»

Dear Parent / Carer of «FirstName» «LastName»,

We recently sent you a letter about measuring «FirstName»'s height and weight in school as part of the National Child Measurement Programme. The measurements have now been done.

Seeing if your child's weight is within the healthy range for their age, sex and height can help you make informed choices about their lifestyle.

«FirstName»'s results	
Height (cm)	«Height»
Weight (kg)	«Weight»
Date of measurement	«DateOfMeasurement»

These results suggest that your child is a «ClinicalBMICategory» for their age, sex and height.

To help your child remain healthy, you can:

- Go online for practical advice at: www.nhs.uk/change4life and www.nhs.uk/ncmp2

You can find out how «FirstName»'s result was calculated, and check how «FirstName» is growing over time, by going to www.nhs.uk/bmi.

This information has not been shared with «FirstName», other children or school staff. Locally, this information is held by your local NHS/local authority public health team and is treated confidentially.

Yours sincerely,
School Health Team

Some medical conditions or treatment that your child is receiving may mean that BMI centile is not the best way to measure your child. Your GP or other health professional caring for your child will be able to discuss this with you.

South Tyneside NHS
NHS Foundation Trust

School Nursing Service
Springwell Health Centre
Springwell Road
Sunderland
SR3 4HG
Telephone No 0191 502 5426

Private and confidential

Parent / Carer of «FirstName» «LastName»
«Address1»
«Address2»
«Address3»
«Address4»
«Postcode»

09 August 2018

Dear Parent / Carer of «FirstName» «LastName»,

We recently measured your child's height and weight at school as part of the National Child Measurement Programme. A letter about this was sent to you before the measurements were taken.

Seeing if your child's weight is within the healthy range for their age, sex and height can help you make informed choices about their lifestyle.

«FirstName»'s results	
Height (cm)	«Height»
Weight (kg)	«Weight»
Date of measurement	«DateOfMeasurement»

These results suggest that your child is a healthy weight for their age, sex and height. To help «FirstName» remain healthy, you can take a look at the tips on the enclosed Change 4 Life leaflet or go online for practical advice at www.nhs.uk/change4life and www.nhs.uk/ncmp2.

You can find out how «FirstName»'s result was calculated, and check how they are growing over time by going to www.nhs.uk/bmi.

This information has not been shared with «FirstName», other children or school staff. Locally, this information is held by your local NHS Child Health Team and is treated confidentially.

Thank you for reading this letter – we hope this information is useful to you. If you need any help or advice, please telephone your School Nurse Team on 0191 502 5426.

Providing a range of NHS services across Gateshead, South Tyneside and Sunderland.

Figure 74: Example of the Letter (as Sampled)

3.3.5 Topic modelling

The final classification technique of the text analysis was topic modelling. Many algorithms are available for the topic modelling; this project utilised the Latent Dirichlet Allocation (LDA), which is a Bayesian mixture model for discrete data where topics (not the words) are assumed to be uncorrelated (Hornik & Grün, 2011, p. 1). Similarly to hierarchical clustering conducted previously, a topic model is an unsupervised document classification technique. The LDA identifies a mixture of topics occurring across each document and a mixture of words occurring within each topic (Jockers & Thalken, 2020; Silge & Robinson, 2017). This allows estimating *beta* as the probability of a term occurring in a given topic and *gamma* as the probability of a topic occurring inside a document (Silge & Robinson, 2017).

3.3.5.1 Selecting the optimal number of topics

As with Hierarchical clustering, topic modelling is required to determine the number of the optimal number of topics. This challenging task was resolved to utilise the ldatunning package that implements metrics developed by Deveaud et al., Griffiths and Steyversare that are expected to be maximized, and metrics by Cao et al. and Arun et al. that are expected to be minimized (Arun et al., 2010; Cao et al., 2009; Deveaud et al., 2014; Griffiths & Steyvers, 2004; Nikita & Chaney, 2020). To minimise/maximise means that the desired value of the metric is expected to be low/high when determining the optimal number of topics.

The letters were separated according to their weight categories to improve the results, and the range of potential topics was set to be between 1 to 30. Figure 75 below shows the optimal number of topics per letter category, and the dotted red line indicates the number of topics selected for the final model. For the Panel A, COMB version, I had selected seven topics, 7 for HW version, 8 for UW version, 4 for OW version, and 6 for VOW version. The decision was guided by the available metrics but also by the principle of parsimony and interpretability of the results.

Before showing the results of the topic modelling, it should be highlighted the following two matrices are presented in the following sections – *beta* (β), which is the logarithmic parameter of the word distribution for each topic or simply put a probability of words per each topic, and *gamma* (γ) which is the posterior topic distribution for each document or simply put topic probabilities per each document (Hornik & Grün, 2011; Silge & Robinson, 2017). The gamma will be presented as combined average proportions of the probabilities across all letters because it would not be possible to identify the probabilities for each of the 300 documents in the corpus.

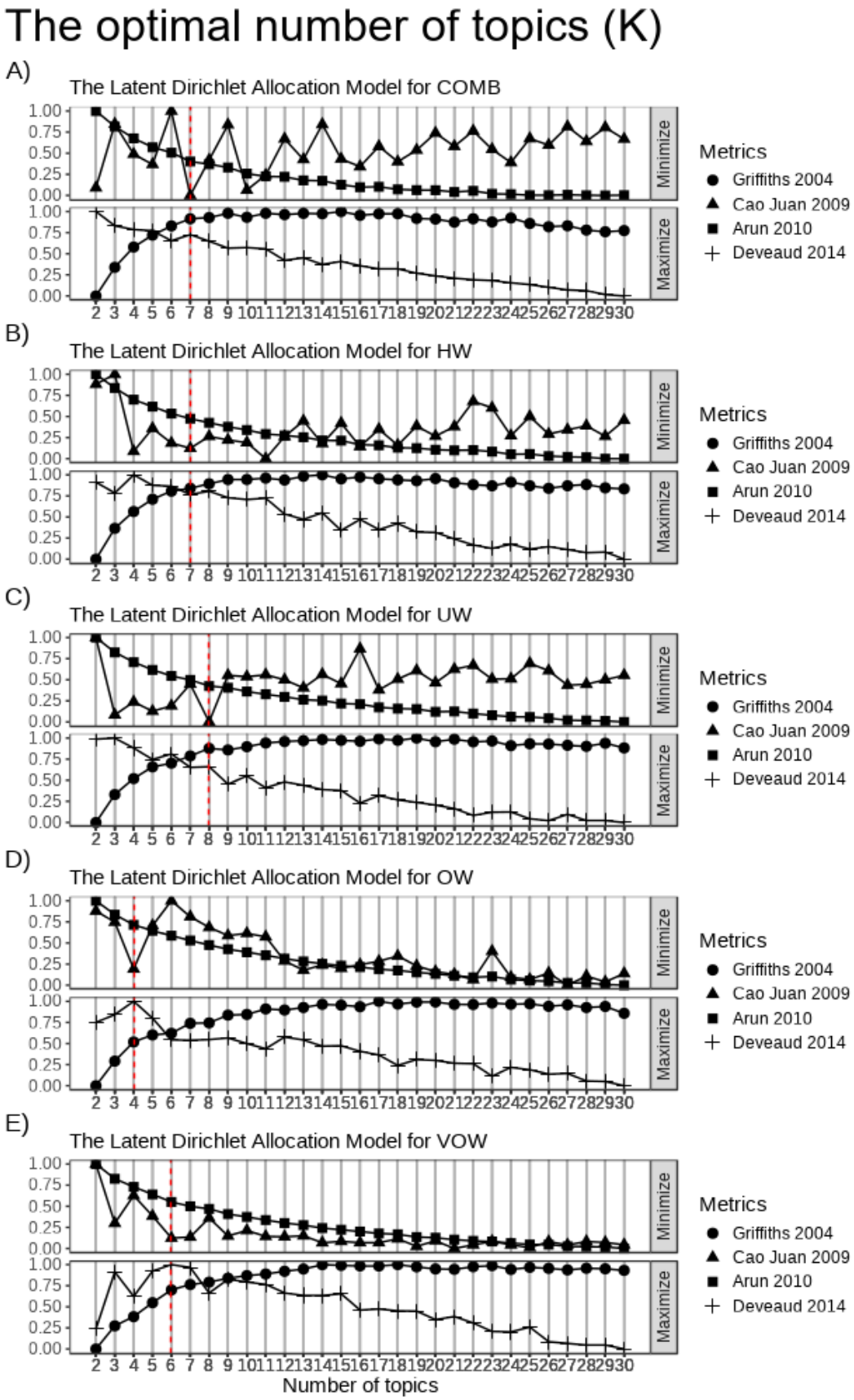


Figure 75: The Optimal Number of Topics

3.3.5.2 Topics in combined weight letters

This first letter to analyse was the combined version seven topics were identified. Figure 76 shows the top 15 terms identified across these topics and the corresponding *beta* that shows the probability of the term within the topic.

Topic 1 contained terms such as "**help**", "**make**", "**change**", which could relate to making simple changes after receiving the result. Topic 2 may refer to discussing further details with the school nurse if parents were concerned, as per the terms "**school nurs**", "**advice**", and "**concern**". For topic 3, the terms "**height**", "**letter**", "**nation child measur programme**" suggest that the topic could describe the moments when parents received the letter. In topic 4, the words "**support**", "**lifestyl**", and "**local**" may suggest that it could relate to referring services to parents and expanded with "**service**" and "**gp**", a similar purpose (but for different services) could have topic 5. Finally, topics 6 and 7 seemed to be specific to the underweight, overweight, and very overweight categories since they feature these weight-related terms and the word "**problem**".

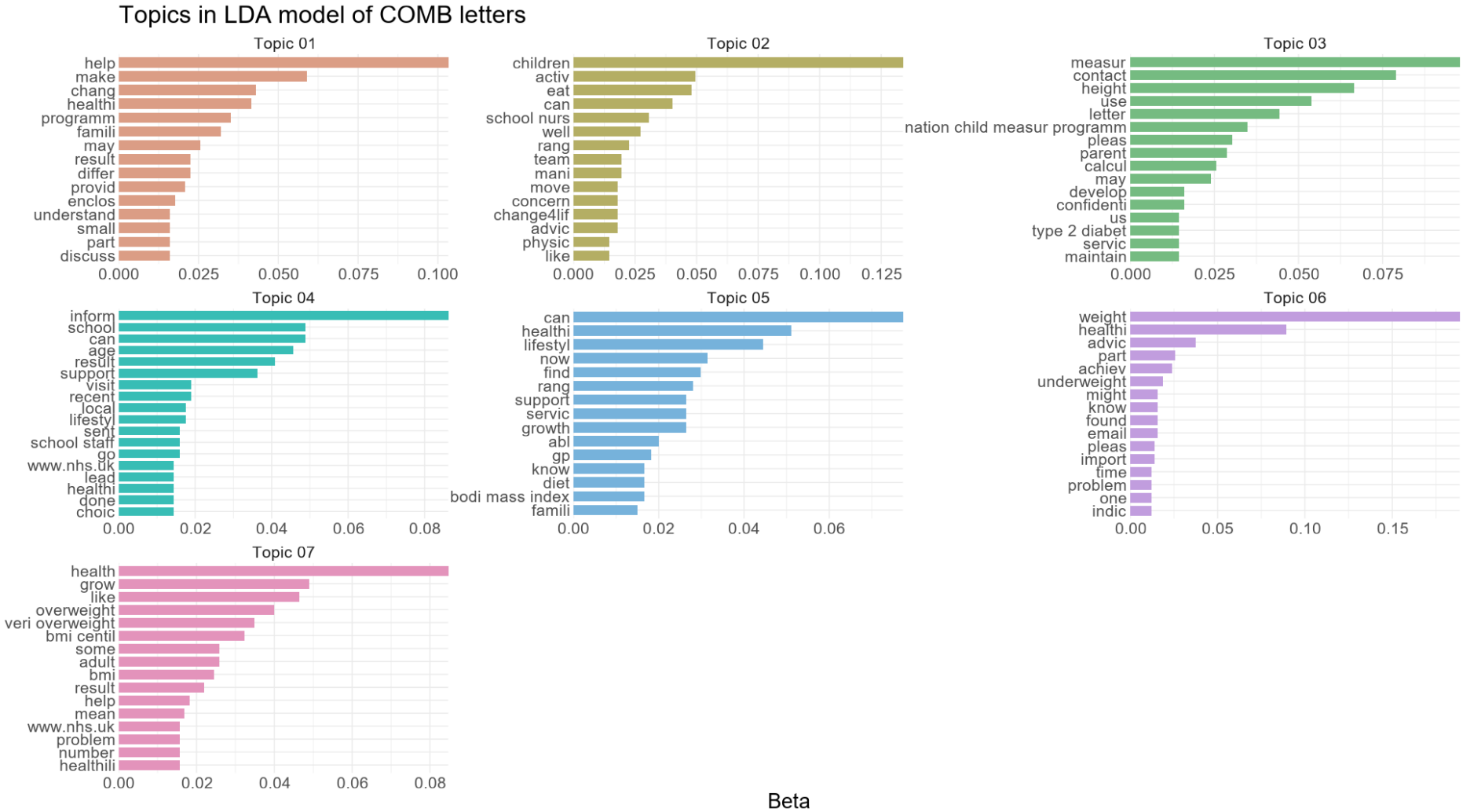


Figure 76: Topics in COMB Letters

The following Table 6 shows the overall coverage of the topic as occurring across all the documents – average *gamma*. The most common was topic 7, and the least common were topics 2 and 5.

Table 6: Coverage of the Topics in the Documents

Topic	Gamma	Relative percentage	Cumulative percentage
Topic 01	14.014	14%	14%
Topic 02	12.999	13%	27%
Topic 03	15.129	15%	42%
Topic 04	15.401	15%	58%
Topic 05	12.808	13%	70%
Topic 06	13.538	14%	84%
Topic 07	16.112	16%	100%

3.3.5.3 Topics in healthy weight letters

This second letter to analyse was the healthy version; another seven topics were identified. Figure 77 shows the top 15 terms that were identified across these topics.

Topic 1 contained terms such as "**help**", "**make**", "**suggest**", which could relate to tips and suggestions that parents can implement after receiving the result. Topic 2 could refer to the information about the purpose of the NCMP as indicated with terms such as "**measur**", "**grow**", and "**recent**". Topic 3 contained the terms "**profession**", "**treatment**", "**nation child measur programme**", which suggest focusing on the possibility to discuss underlying health conditions or possible cases where these measurements may not be accurate. In topic 4, the words "**can**", "**advic**", and "**remain**" suggest what the parents could do to help their child remain healthy. Topic 5 included terms such as "**inform**", "**sex**", and "**school**", which likely refers to the information relevant to discussing the programme with school nurses or staff. Topic 6 referred to "**children**", "**health**", "**family**", and this indicated the topic might relate to information about a child and possible services that they could visit. The final topic 7 included terms such as "**firstname**", "**discuss**", "**maintain**" that indicated the topic might relate to information directly associated with the child.

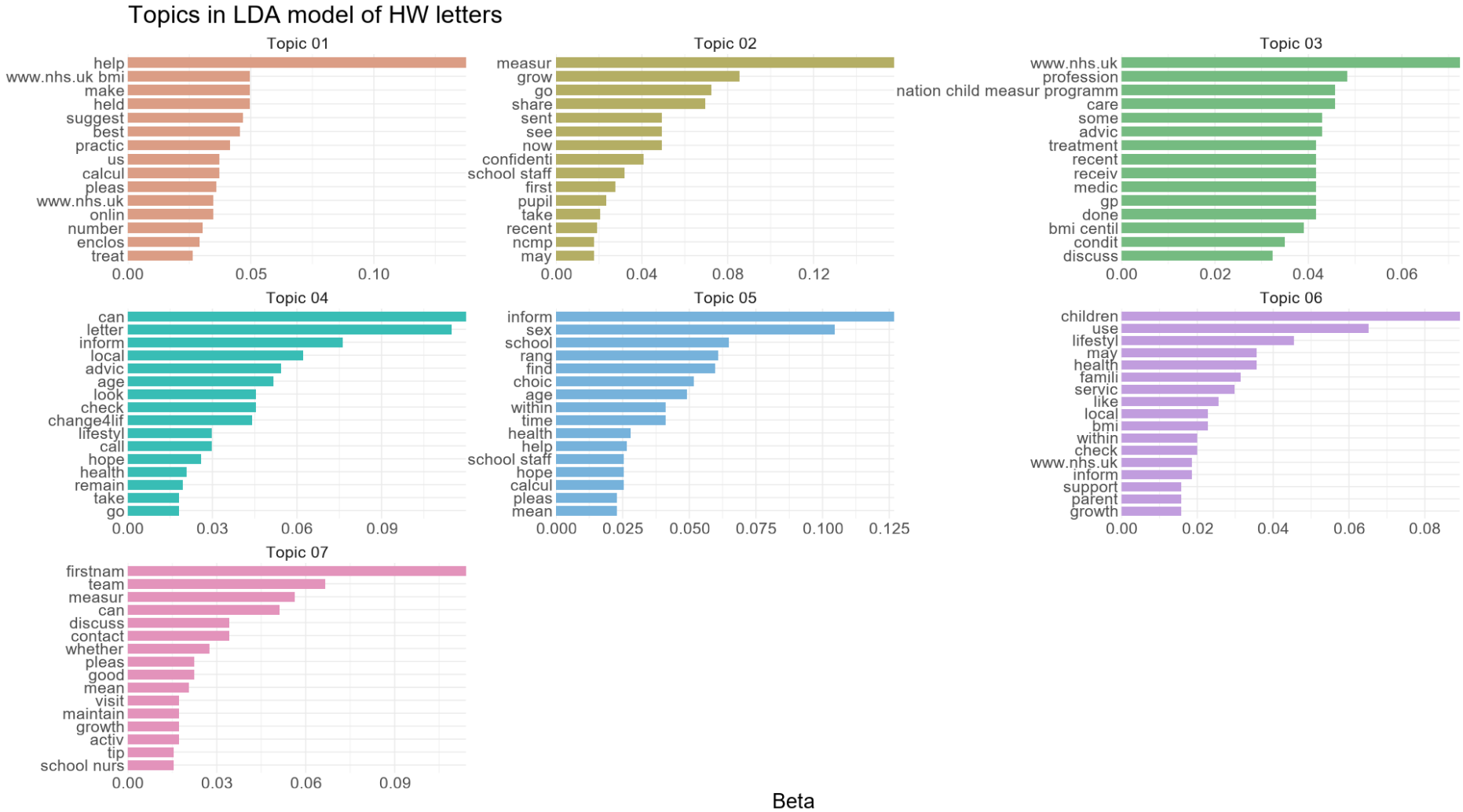


Figure 77: Topics in HW Letters

The distribution of the topics across all letters was equal, with the highest *gamma* recorded for topic 04 and the lowest for topic 07 (Table 7).

Table 7: Coverage of the Topics in the Documents

Topic	Gamma	Relative percentage	Cumulative percentage
Topic 01	14.666	15%	15%
Topic 02	14.144	14%	29%
Topic 03	14.956	15%	44%
Topic 04	15.294	15%	59%
Topic 05	15.078	15%	74%
Topic 06	13.204	13%	87%
Topic 07	12.657	13%	100%

3.3.5.4 Topics in underweight letters

Continuing the analysis, the third letter was the underweight version, where eight topics were identified. Figure 78 shows the top 15 terms that were identified across these topics.

Topic 1 contained terms such as "**some**", "**gp**", "**treatment**", which could relate to discussing some of the children who may need further assistance regarding their weight. Topic 2 could refer to the fact that some children could be healthy despite the underweight results, as suggested by the terms "**help**", "**perfect**", and "**speak**". Topic 3 contained the terms "**inform**", "**confidenti**", "**public health**", which suggest focusing on the act of delivering the letters, maintaining privacy, and referring personnel responsible for the letters. Topic 4 was similar to topic 1 with the terms such as "**result**", "**letter**", and "**check**", but the topic referred more to the results and option of using tools such as BMI tracker to check the weight continuously. Topic 5 included terms such as "**underweight**", "**health**", and "**choice**" and seemed to relate directly to the underweight status and suggestion for a behaviour action. Topic 6 referred to "**contact**", "**nhs.uk**", "**school service**", and this indicated the topic might relate to information that was available to parents from different sources that they could utilise. Topic 7 included terms such as "**firstname**", "**growth**", "**problem**" that could further relate to the results associated with the child and suggestions there may be a need for action. Finally, topic 8 included terms such as "**sex**", "**suggest**", "**health**" that indicate the topic may again relate to the potential need to address the underweight result given the child's gender and age.

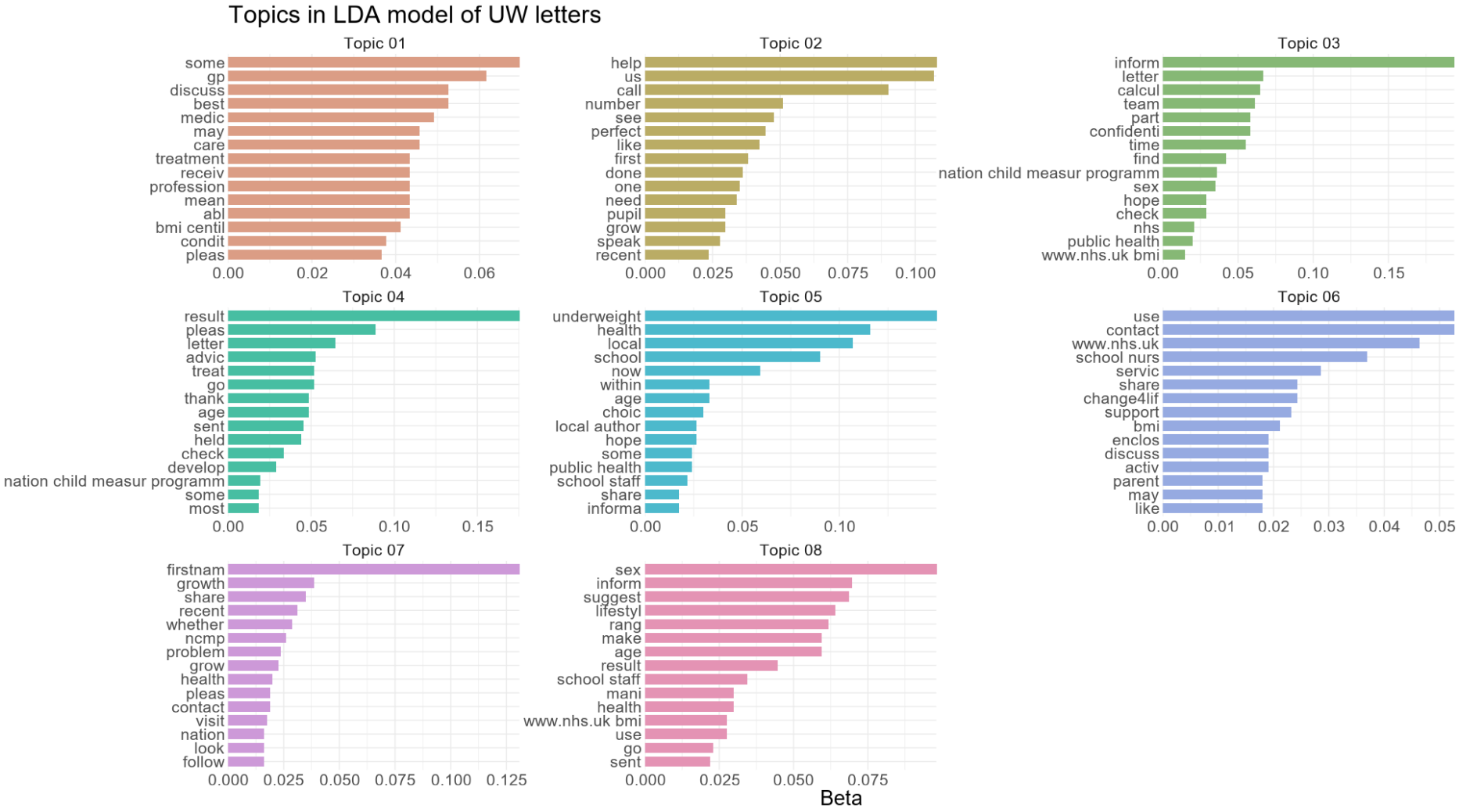


Figure 78: Topics in UW Letters

The distribution of topics was again reasonably equal to the extent that the differences between the topics were about 1 – 2% (Table 8).

Table 8: Coverage of the Topics in the Documents

Topic	Gamma	Relative percentage	Cumulative percentage
Topic 01	12.368	12%	12%
Topic 02	13.267	13%	26%
Topic 03	13.294	13%	39%
Topic 04	12.968	13%	52%
Topic 05	12.435	12%	64%
Topic 06	11.976	12%	76%
Topic 07	11.365	11%	88%
Topic 08	12.327	12%	100%

3.3.5.5 Topics in overweight letters

This fourth letter to analyse was the overweight version, where four topics were identified. Figure 79 shows the top 15 terms that were identified across these topics.

Topic 1 contained terms such as "**make**", "**overweight**", "**help**", and possibly related directly to the result and potential actions that parents could do to avoid their child becoming an adult with overweight. Topic 2 could refer to further referrals of a child to potential service given the results as it included terms such as "**health**", "**age**", and "**servic**". Topic 3 contained the terms "**healthi**", "**firstname**", "**school nurs**", which suggest that the child could be referred to the school nursing team based on the results. The final topic 4 included terms such as "**inform**", "**local**", and "**support**" and may relate to the services and support available in the LGA's area.

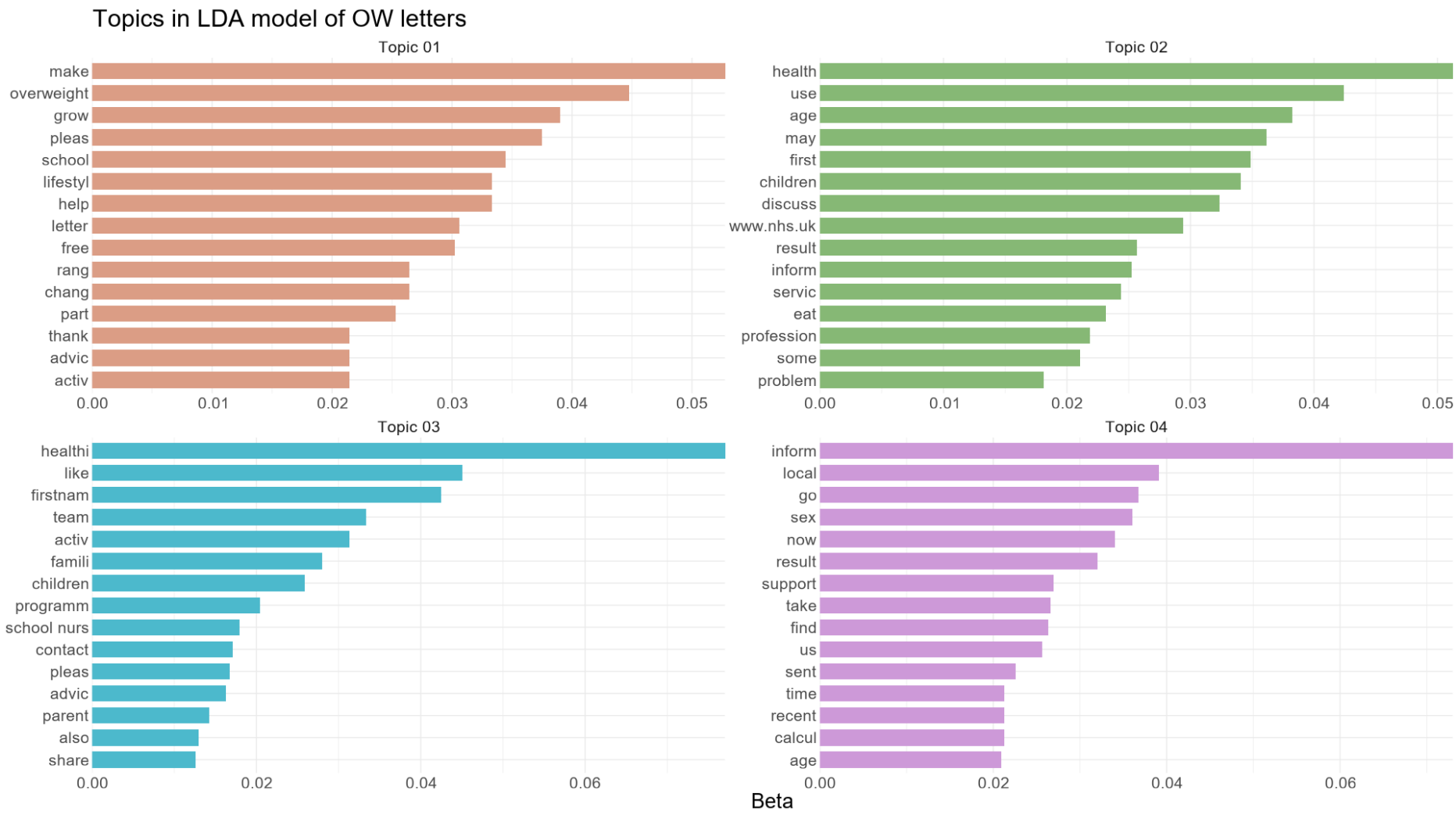


Figure 79: Topics in OW Letters

The most common topic was Topic 04 while the least common topic was topic 03 as per the following Table 9.

Table 9: Coverage of the Topics in the Documents

Topic	Gamma	Relative percentage	Cumulative percentage
Topic 01	25.254	25%	25%
Topic 02	23.329	23%	49%
Topic 03	22.528	23%	71%
Topic 04	28.889	29%	100%

3.3.5.6 Topics in very overweight letters

This final group related to the very overweight letter, and 6 topics for this version were identified. Figure 80 shows the top 15 terms that were identified across these topics.

Topic 1 contained terms such as "**local**", "**veri overweight**", "**type 2 diabet**" and thus seemed to be the topic inciting the actions based on the results of the letter, for example reaching local support. Topic 2 seemed to serve a similar purpose as topic 1 but revolved more around information about the lifestyle services or clubs with terms such as "**healthi**", "**programm**", and "**lifestyl**". Topic 3 contained terms such as "**bmi centil**", "**measur**", or "**grow**", and as such, it could relate to terms that include some information about the measurement method of the NCMP. Topic 4 used the terms such as "**inform**", "**sex**", and "**age**", and that could suggest the topic about providing the results (or informing about them) with regards to specific gender and age of the child. Topic 5 included terms such as "**letter**", "**servic**", and "**advic**" and similarly to topic 2 returned to lifestyle services, topic 2 and 5 seemed similar, but topic 2 seemed to focus on health while topic 5 did not include health – only lifestyle. The final topic 6 used the terms such as "**firstnam**", "**result**", "**overweight**", and similar to previous letters, this topic could relate to results directly about a child.

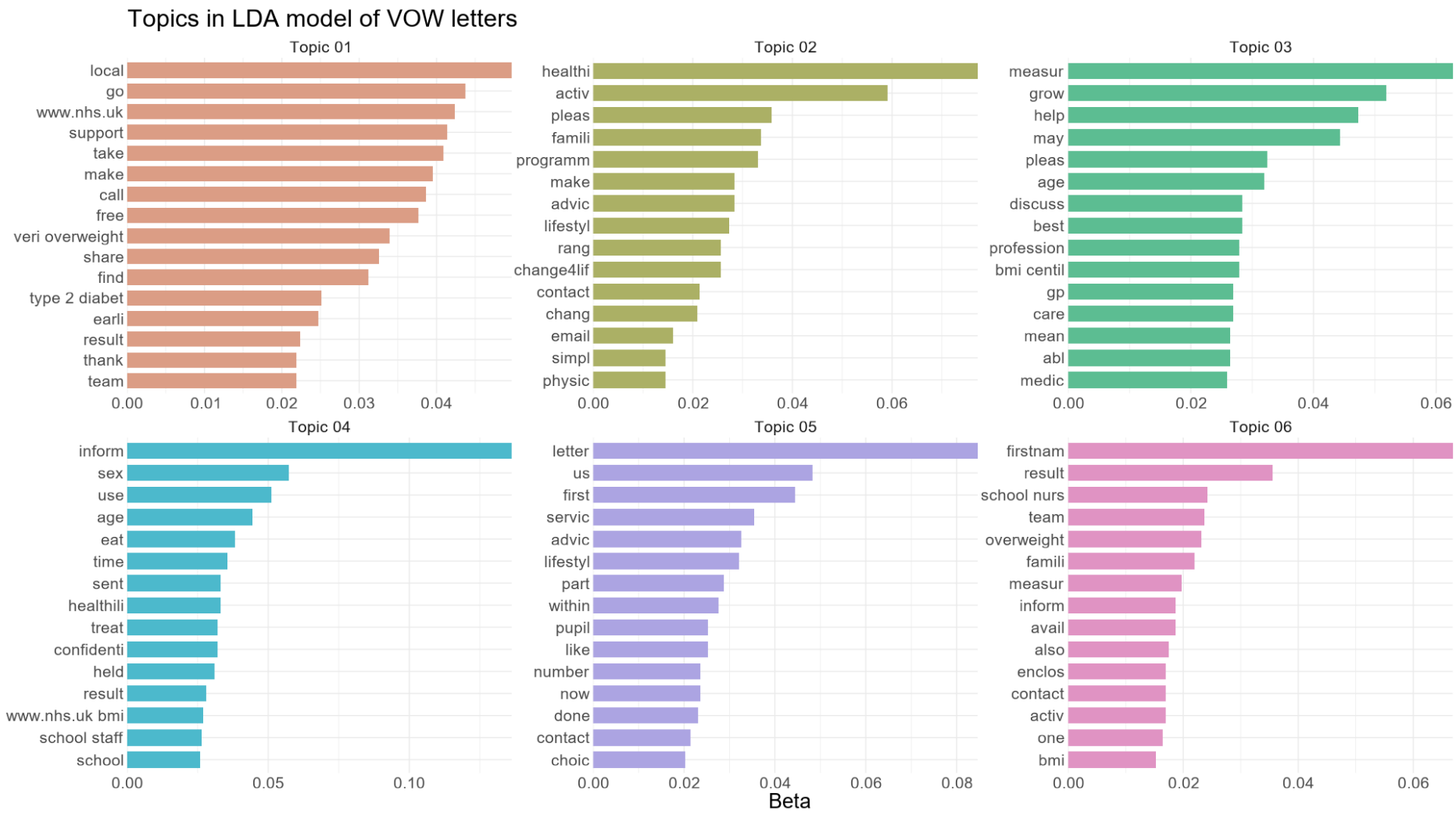


Figure 80: Topics in VOW Letters

Table 10 below shows the frequency distribution of gamma across all letters. It shows that topic 01 was the most prevalent while topic 02 was the least prevalent (but shared the position narrowly with topics 05 and 06).

Table 10: Coverage of the Topics in the Documents

Topic	Gamma	Relative percentage	Cumulative percentage
Topic 01	18.913	19%	19%
Topic 02	15.304	15%	34%
Topic 03	17.531	18%	52%
Topic 04	17.323	17%	69%
Topic 05	15.448	15%	85%
Topic 06	15.481	15%	100%

3.3.5.7 Conclusions

Preliminary assessment with gap statistics and Monte Carlo simulations did not suggest specifying more than one cluster. Clustering algorithms did not seem to produce distinguished clusters. Further overview into the hierarchy of the clusters indicated that the letters from the same LGA were linguistically the closest, but as the exception to this, letters were alternatively clustered based on the weight category (i.e., healthy weight result).

Finally, the topic modelling identified between 4 to 8 topics across all the weight categories. The topics seemed to match the information identified as part of the genre analysis.

The topics in combined weights usually covered a mix between what was representative for the underweight, overweight, very overweight versions, and less so for the healthy weight version. For example, topic 4, with the words “support”, “lifestyl”, and “local”, could well fit into either of the above “ideal” weight versions.

The healthy weight version did not feature topics instructing parents to contact services; if anything, it was more suggestion than instruction and was more focused on advice about maintaining or remaining healthy which can be exemplified by the topics 04 - “can”, “advic”, and “remain”, and 07 - “firstname”, “discuss”, “maintain”.

Contrary to that, the topics in overweight and very overweight versions typically related to inciting potential actions that parents could do to avoid their child further gaining weight with features such as “local”, “veri overweight”, “type 2 diabet” (topic 1, VOW), or “make”, “overweight”, “help” (topic 4, OW).

The underweight letter seemed more varied in the topics and also featured the most topics. At one side, it featured topic 1 with terms such as “some”, “gp”, “treatment”, on the other, it featured topic 2 with terms help”, “perfect”, and “speak” – perhaps an indication that the narrative surrounding these letters was less clear and so might be the utilisation of the communicative purpose.

3.4 Study 2 – Key Outcome Characteristics

The content of the following section provides an appendix for the text in the main document related to key outcome characteristics in Study 2.

3.4.1 The User Experience Questionnaire – Items

Table 11: The UEQ – Items Statistics

Label	Count	Min	Max	Sum	IQR	Mean	Median	SD	Variance	SE	Low. CI	Up. CI	Skew	Kurtosis
annoying VS enjoyable	139	-3	3	45	2.0	0.32	0	1.89	3.58	0.16	0.00	0.64	-0.31	-0.83
conventional VS inventive	139	-3	3	-92	2.0	-0.66	0	1.51	2.28	0.13	-0.92	-0.40	0.11	-0.08
obstructive VS supportive	139	-3	3	46	2.0	0.33	0	1.84	3.38	0.16	0.01	0.65	-0.43	-0.64
bad VS good	139	-3	3	95	2.0	0.68	1	1.96	3.83	0.17	0.34	1.02	-0.55	-0.75
complicated VS easy	139	-3	3	195	3.0	1.40	2	1.63	2.66	0.14	1.12	1.68	-0.97	0.26
unlikable VS pleasing	139	-3	3	60	2.0	0.43	0	1.91	3.64	0.16	0.11	0.75	-0.41	-0.69
usual VS leading edge	139	-3	3	-74	1.5	-0.53	0	1.46	2.13	0.12	-0.77	-0.29	-0.32	-0.29
unpleasant VS pleasant	139	-3	3	40	2.0	0.29	0	1.77	3.12	0.15	-0.01	0.59	-0.45	-0.46
not secure VS secure	139	-3	3	82	2.0	0.59	0	1.65	2.71	0.14	0.31	0.87	-0.23	-0.22
demotivating VS motivating	139	-3	3	39	1.0	0.28	0	1.74	3.03	0.15	-0.02	0.58	-0.37	-0.40
does not meet VS meet expectations	139	-3	3	115	2.0	0.83	1	1.75	3.07	0.15	0.53	1.13	-0.68	-0.20
not understandable VS understandable	139	-3	3	257	2.0	1.85	3	1.75	3.07	0.15	1.55	2.15	-1.52	1.21
inefficient VS efficient	139	-3	3	87	2.0	0.63	0	1.75	3.06	0.15	0.33	0.93	-0.45	-0.49
confusing VS clear	139	-3	3	218	2.5	1.57	2	1.77	3.15	0.15	1.27	1.87	-1.32	0.88
impractical VS practical	139	-3	3	122	2.0	0.88	1	1.73	2.99	0.15	0.58	1.18	-0.60	-0.22
cluttered VS organized	139	-3	3	169	3.0	1.22	1	1.48	2.18	0.13	0.96	1.48	-0.54	-0.05
unattractive VS attractive	139	-3	3	39	1.0	0.28	0	1.29	1.67	0.11	0.06	0.50	-0.15	0.98
unfriendly VS friendly	139	-3	3	64	2.0	0.46	0	1.76	3.09	0.15	0.16	0.76	-0.46	-0.37
conservative VS innovative	139	-3	3	-56	1.0	-0.40	0	1.24	1.55	0.11	-0.62	-0.18	-0.22	0.72
dull VS creative	139	-3	3	-35	1.0	-0.25	0	1.52	2.32	0.13	-0.51	0.01	0.06	0.11
difficult VS easy learn	139	-3	3	123	3.0	0.88	1	1.85	3.42	0.16	0.56	1.20	-0.54	-0.61
inferior VS valuable	139	-3	3	97	2.0	0.70	1	1.98	3.92	0.17	0.36	1.04	-0.61	-0.76
boring VS exciting	139	-3	3	15	1.0	0.11	0	1.49	2.23	0.13	-0.15	0.37	-0.34	0.16
not interesting VS interesting	139	-3	3	103	2.0	0.74	1	1.84	3.40	0.16	0.42	1.06	-0.55	-0.52
unpredictable VS predictable	139	-3	3	113	2.0	0.81	1	1.51	2.28	0.13	0.55	1.07	-0.41	-0.04
slow VS fast	139	-3	3	54	1.0	0.39	0	1.42	2.02	0.12	0.15	0.63	0.07	0.32

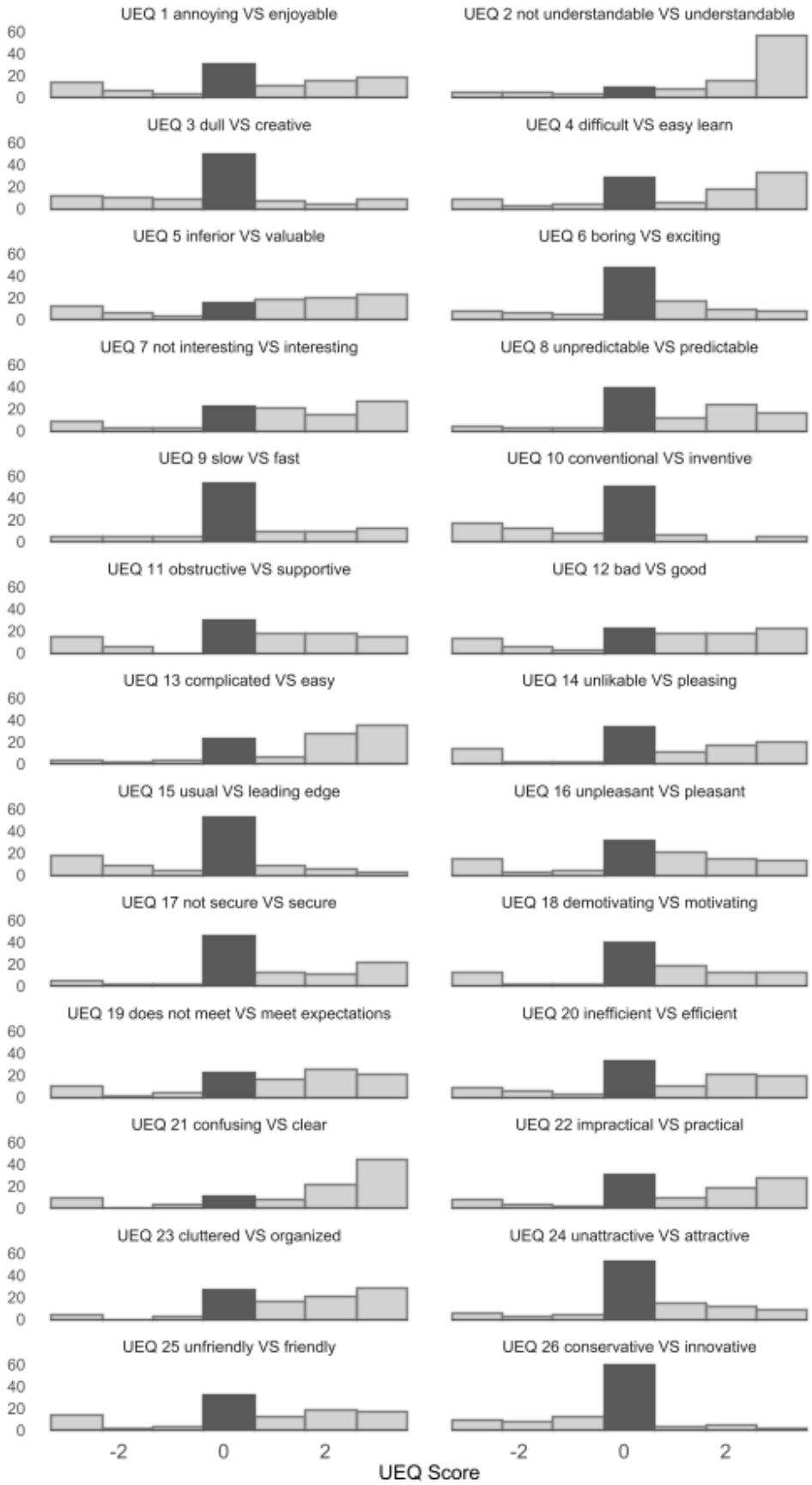


Figure 81: UEQ Score Range

3.5 Study 2 – Optional Explanatory Characteristics

The following characteristics were optional as they were unavailable to participants across all sites. These characteristics were also removed because they may not have provided sufficient distinction across all levels of measurement. Therefore, the text and the paragraph were moved to the current appendix.

For example, the non-English native language was declared only by six parents (4%), which would not be sufficient for any meaningful comparison. Similarly, parents' ethnicity was non-white only among eight participants (6%).

The first variable in Table 12 below is the parent's ethnicity. Eighty-four parents (60%) declared their ethnicity to be white. Although ethnicity may be an interesting covariate, in this case, the non-White minorities were not represented sufficiently for any meaningful statistical comparison.

Table 12: Parent's Ethnicity

Parent's ethnicity	Frequency	Cumulative frequency	Relative frequency	Relative percentage	Cumulative percentage
White	84	84	0.60	60%	60%
Missing	42	126	0.30	30%	91%
Refuse to say	5	131	0.04	4%	94%
Asian	4	135	0.03	3%	97%
Black	2	137	0.01	1%	99%
Mixed	1	138	0.01	1%	99%
Other	1	139	0.01	1%	100%

Table 13 shows the frequency of native and non-native speakers in the collected sample. Similarly to the previous table, there were not enough non-native speakers for meaningful comparison with 50 parents (36%) who have indicated to be a native English speakers.

Table 13: Parent's English Proficiency

A parent is a native English speaker	Frequency	Cumulative frequency	Relative frequency	Relative percentage	Cumulative percentage
Yes	50	50	0.36	36%	36%
Missing	41	91	0.29	29%	65%
Not asked	41	132	0.29	29%	95%
No	6	138	0.04	4%	99%
Refuse to say	1	139	0.01	1%	100%

The final optional outcome variable is a parent's employment status presented in Table 14. The variable was not key because it was not included all sites. The effect of parents' employment status was not expected to be a strong covariate of parental opinion regarding the letter or their willingness to engage with the services, which were commonly free of charge. Additionally, data were unavailable for 84 parents (59%) in the sample, and 11 parents indicated they were not working for one reason or another (7%).

Table 14: Parent's Employement Status

Parent's employment status	Frequency	Cumulative frequency	Relative frequency	Relative percentage	Cumulative percentage
Missing	41	41	0.29	29%	29%
Not asked	41	82	0.29	29%	59%
Working (full-time employee or business owner)	22	104	0.16	16%	75%
Working (part-time)	13	117	0.09	9%	84%
Not working (other)	9	126	0.06	6%	91%

Working (self-employed)	9	135	0.06	6%	97%
Not working (disabled)	2	137	0.01	1%	99%
Refuse to say	2	139	0.01	1%	100%

3.6 Study 2 – Assumptions and Data Processing

The following appendix discusses in detail the assumptions assessed as part of the statistical analyses and steps taken as part of data processing. These assumptions are presented in an appendix to allow the main text to focus on findings.

Three causal diagrams were developed as part of the proposed analysis of Study 2. They were already discussed as part of the method chapter of Study 2 in the main text and used in the registered report. They were featured in the findings section and modified to highlight variables that had to be removed because they were not used in the analysis.

The actual number of variables to analyse was already restricted and separated into key and optional. Specifically, the optional sample characteristics were variables that have been removed from further analysis. This affected variable relevant to a parent's native language, i.e., if they speak English (Parent English Speaking), parent's ethnicity, marital status, disability status, employment status.

Other explanatory variables were removed if they had low correlation ($r \leq 0.20$ or $r \geq -0.20$) with the outcome variable and as part of the hierarchical/sequential regression process where the most parsimonious solution was the aim (Tabachnick & Fidell, 2013).

3.6.1 Assessing the correlation structure

The correlation structure of all variables was assessed as part of constructing the models focusing on interaction with the letter and user experience. The matrix was also used to understand the variables and decide which to include. As most variables were categorical, a heterogeneous correlation matrix was computed using the "hetcor" function from the "polycor" package (Fox, 2019). The function uses Pearson correlation on numeric variables, but polyserial if variables are numeric and ordinal, or polychoric when variables are ordinal. The method was applied to obtain a correlation matrix between all outcome and exploratory variables. Some cells were adjusted for 0 values during the computation process using the correction for continuity. The matrix was developed on 86 participants who had non-missing values.

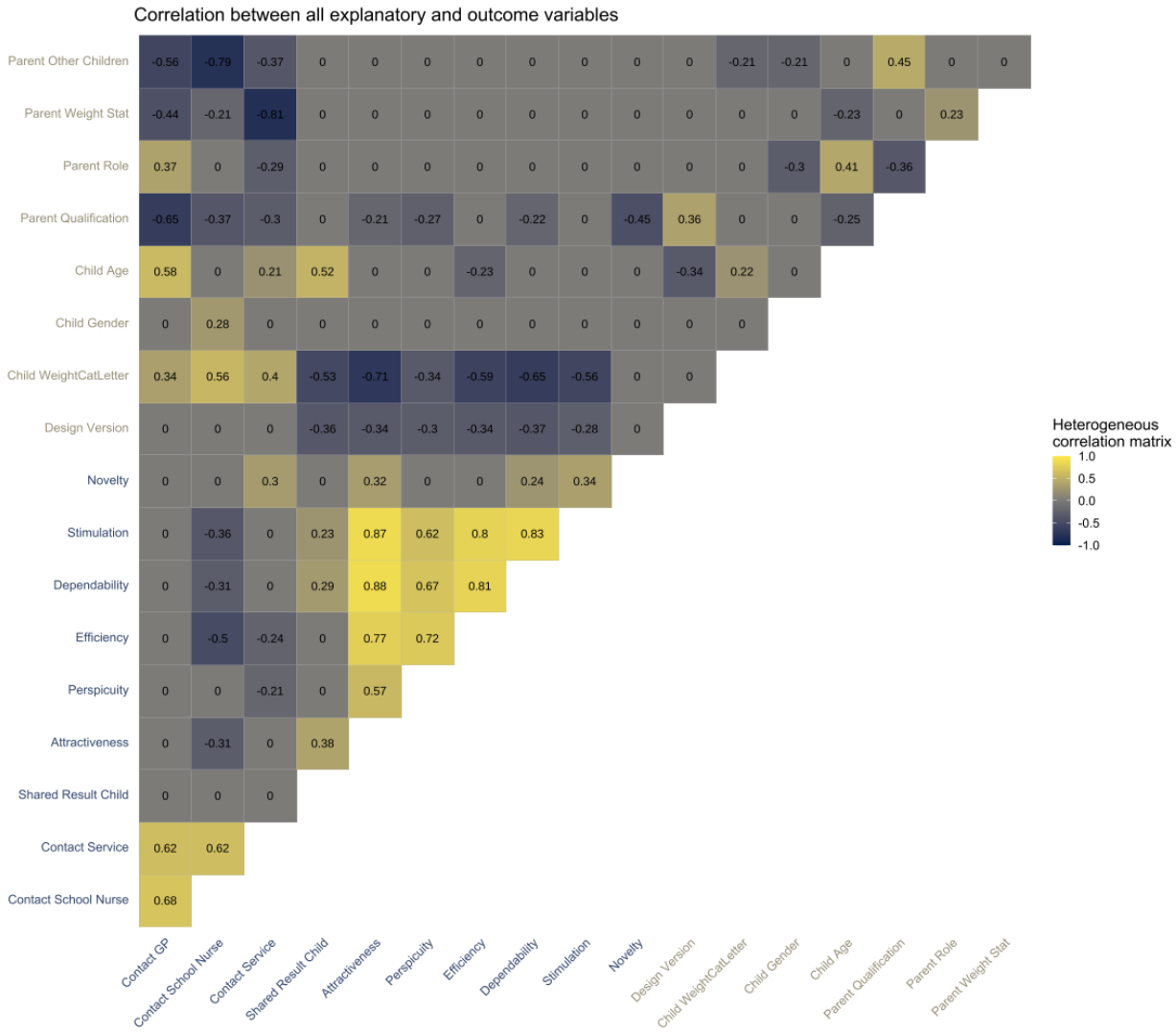


Figure 82: Correlation Matrix between Outcome and Explanatory Variables

The resulting matrix presented above (Figure 82) shows all variables. Text on x and y axes was colourized; all outcome variables are blue (the top 8), and all explanatory variables are grey (the bottom 9). All variables below the threshold of coefficient $r \leq 0.20$ or $r \geq -0.20$ were replaced with 0 to ease the interpretation of the matrix. The remaining variables were all critical for further analysis. However, variables that had a high correlation (e.g., above +/- 0.5) with any of the outcome variables (i.e., contacted school nurse, contacted GP, contacted service, shared the results with children, and UEQ factors) were likely to be more influential. Additionally, variables that correlated with more than only one outcome variable were also investigated as they might be more universal. For example, Child's gender was only relevant to whether parents contacted the school nurse but were below the threshold for all other variables.

To decide which variables should be excluded from further analyses, the criteria of $r \leq 0.20$ or $r \geq -0.20$ was used. Simultaneously, the variables that did not correlate with more than one outcome variable ($y > 1$) were also excluded. All other variables were analysed further in linear and logistic (binary) regression models.

Based on the criteria mentioned above, six explanatory variables were removed because they were either not in all sites (optional, denoted "**Op.**)", or the correlation matrix indicated that they were below the threshold and correlated only with one outcome variable (denoted "**Cor.**"). The two variables – *marital status*, and *disability* of parents were not reported as optional characteristics as there have been only eight responses regarding the marital status and nine negative responses regarding the disability question. I have filtered these out as unusable due to very low response rate. Only a child's gender was removed because of the low correlation that has been only marginally better for only one of the behavioural outcome variables.

- What is a parent's marital status? (**Op.**)
- Do parents have a disability? (**Op.**)
- What is a parent's employment status? (**Op.**)
- Do parents speak fluently English? (**Op.**)
- What is a parent's ethnicity? (**Op.**)
- Child's gender. (**Cor.**)

An additional two explanatory variables were excluded because the level of analysis did not allow to derive meaningful association with the outcome variable. These are related to the index of multiple deprivations. For example, it was not possible to verify whether the postcode where the survey was completed matched the postcode of the participant's household, nor was it possible to reliably match the school attended by a child with the completed response.

- School IMD
- Derived household IMD

The following two explanatory variables were included in the models on the side of children (numbers in parentheses indicate the order of entry into the model):

- Child's weight category in the letter (1)
- Child's age (5)

The following five explanatory variables were included on the side of parents:

- Design of letter received (2)
- Parent's weight status (3)

- Whether parent have any other children that received the NCMP (4)
- Highest qualification achieved by a parent (6)
- Parent's role (i.e., mother / father) (7)

The numbers in parentheses indicate the order in which the variables were fitted in both binary logistic regression and linear regression. The order reflects the theoretical importance assigned to these variables.

These four variables were all part of the initial binary logistic regression models run on the four following outcome variables labelled as letter interaction:

- Contacted service
- Contacted GP
- Contacted school nurse
- Shared the results with children

The linear regression runs on the following six outcome variables, which were the factors from the User Experience Questionnaire (Laugwitz et al., 2008):

- Attractiveness
- Dependability
- Efficiency
- Novelty
- Perspicuity
- Stimulation

Finally, the following three outcome variables (of letter interaction) were excluded because they were not asked across all sites:

- Did you use the BMI calculator? (**Op.**)
- Did you visit the C4L website? (**Op.**)
- Has the letter changed your opinion? (**Op.**)

3.6.2 Variable coercion and visualisation

Variables were dummy coded where appropriate (also known as one-hot encoding); for example, variable about the result letter categories with four levels (HW, UW, OW, VOW) was separated into $n - 1$ column where each column represented one level with 0 or 1 (Hastie et al., 2013). The dummy coding also enabled the visualisation of binary logistic regression models.

Additionally, all variables in the model that were categorical and had $k > 2$ levels were reduced into $k = 2$ levels (for example, one k in Gender would be Male). This was done on all remaining variables (See 3.3.1.), excluding parent's role (Mother, Father) and child's age (Year 6, Reception year) which had exactly two levels. For example, the levels of the weight letter category of a child (Healthy weight, Underweight, Overweight, and Very Overweight) were merged from k = 4 to k = 2; specifically, "healthy weight" and "not healthy weight" levels. This was done to maximise the sample size in exchange for losing some detail of analysis, and it was done only with explanatory variables.

The procedure is better understood in the following graph, which shows all explanatory variables and their levels plotted on the x-axis before and after their levels have been reduced.

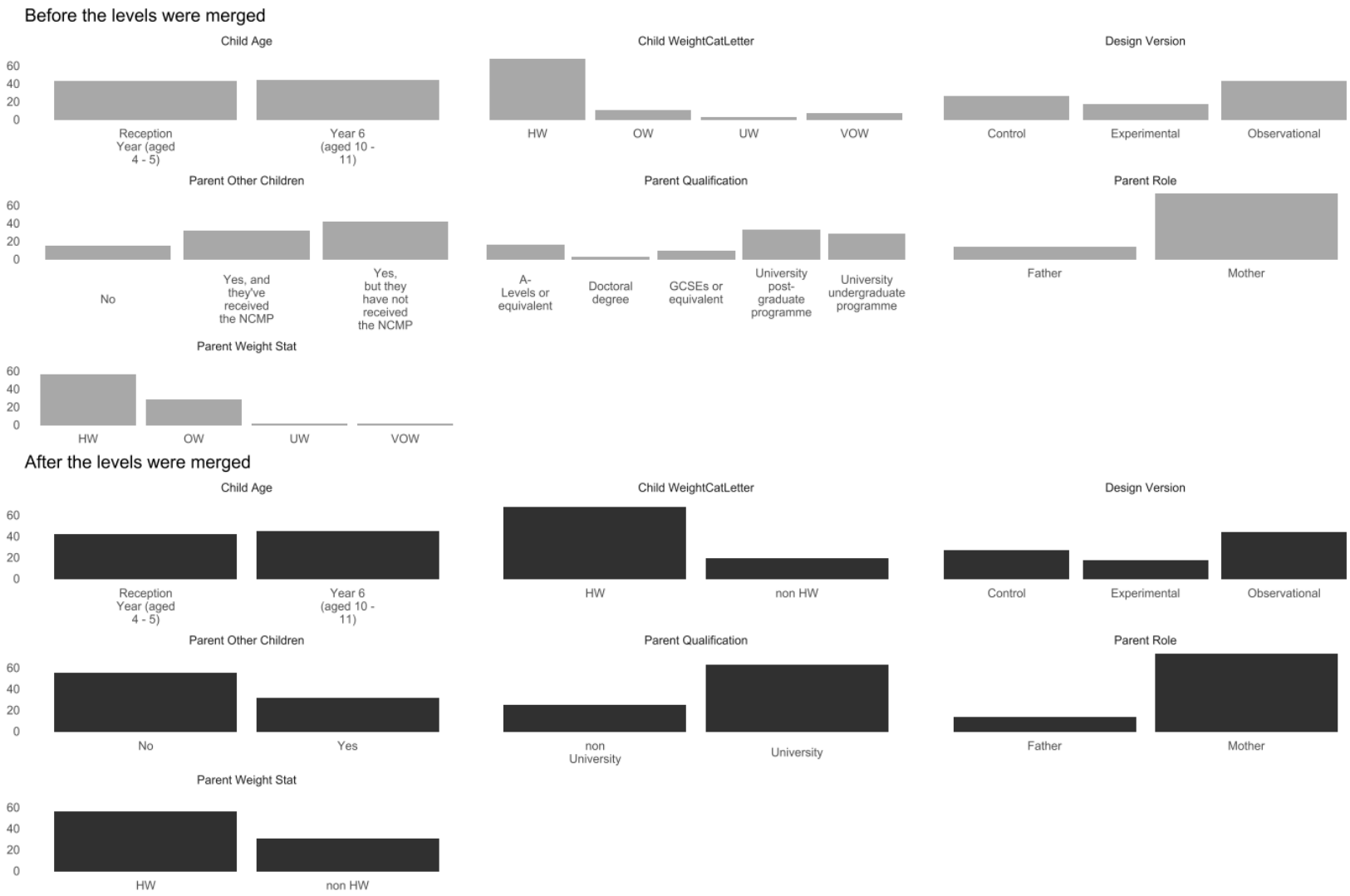


Figure 83: Merging the Levels of All Categorical Variables

Figure 83 shows a reduction in the levels for all variables with k > 2. This removed levels that were poorly represented in the sample (such as UW category). This means that the analyses became more robust in exchange for analytical detail. This was done because the sample had only 89 participants, and retaining all levels would result in unequal comparisons and weak statistical power.

Finally, the Design version was the only variable with k > 2, which was not reduced to k = 2. This was because in the design, the only two sites which can be compared are experimental with control but comparing observational site with control or with experimental would not be logical.

3.6.3 Included variables and process of model selection

The following brief section shows variables included in all models and the order in which they were added into the model.

Table 15 shows this. The first column overviews all variables, the second column has numbers at which a given variable was entered into the model – this is effectively a variable importance.

The final model did not have to include all listed variables, instead, the final model was decided upon comparing other models, and the most parsimonious solution was selected.

Table 15: Variable Importance

Variable	Order / Importance
Child's weight category in the letter	1
Design of letter received	2
Parent's weight status	3
Whether parent have any other children that received the NCMP	4
Child's age	5
Highest qualification achieved by the parent	6
Parent's role (i.e., mother / father)	7

The model comparison employed several techniques to determine the optimal fit – this is briefly overviewed in the next section.

3.6.4 Comparison of regression models

When multiple models are being compared, the general assumption is that either the model has been trained on the hold-out dataset or the same data set, but the parameters were held the same across different models (Harrell Jr, 2015). The second approach will be utilised to facilitate the model selection process; specifically, I will be using analysis of variance (or F – test) to determine the preferable model based on the residual sum of squares differences between different models (Fox & Weisberg, 2019, p. 261). The preferable model will be

determined using a manual forward selection procedure and the variables that have been assigned higher importance (see Table 15 above) will be added first (Faraway, 2015).

Other approaches will be used to accompany the selection process. I will consider the AIC (Akaike information criterion) and BIC (Bayesian information criterion) criteria of the models and prefer parsimonious models with more minor criteria (Faraway, 2015; Harrell Jr, 2015). I will also use the adjusted coefficient of determination (R^2) where appropriate or similar coefficient to quantify discrimination of the model (Harrell Jr, 2015).

Once the suitable candidate for the final model has been determined, I will conduct further regression diagnostics such as QQ-plots, an inspection of residual plots, and identify potential outliers which could be removed (Fox & Weisberg, 2019).

The procedures described above were applied across binary logistic and linear regression. In addition, some adjustments, such as using McFadden's Pseudo R (rather than the standard adjusted R^2), were applied for the logistic regression to adjust for a different family of the model (Veall & Zimmermann, 1994).

3.6.5 Assumptions of regression

Like every model, the regression models had assumptions to be evaluated as part of the diagnostic assessment. First, it was assumed that the models were linear and additive (Harrell Jr, 2015). This assumption was evaluated using residual plots, which will be examined for unusual patterns, QQ-plots, and, where possible, scatter plots.

Additionally, assumptions of constant error variance, normality, outliers, influential points, and large leverage points were evaluated using residual plots and diagnostic plots measuring Cook’s distance, hat-values, Bonferroni p-values, and studentised residuals (Faraway, 2015; Fox & Weisberg, 2019).

Finally, an important assumption was conditional independence, which is challenging to diagnose after data collection as it stems more from the context of the analysis and research design (Faraway, 2015). The research design employed here provided random distribution of the letters at the school level in Lewisham, non-random distribution in observational/national sites, and quasi-experimental distribution of letters in Suffolk site. In the scenario where everyone accessed the survey, and the study had thousands of participants, it would be possible to further restrict participants to avoid potentially associated samples; however, the low sample size did not allow this. The participants were ultimately willing to read the letter to the point where they did not mind typing the link into the survey and were kind enough to provide the feedback.

3.6.6 Model definition

This brief section describes the mathematical expression of the methods used in the analysis. Two models were utilised.

The following formula for the linear model was applied for the UEQ:

$$y = \beta_0 + \beta_1 X_1 + \beta_n X_n$$

The following formula for the binary model was applied to the variables measuring interaction with the letter:

$$Prob(y) = \frac{exp(\beta_0 + \beta_1 X_1 + \beta_n X_n)}{1 + exp(\beta_0 + \beta_1 X_1 + \beta_n X_n)}$$

Expressing the formulas as variables lead to the following: *Outcome variable ~ Child's weight category in the letter + Design of letter received + Parent's weight status + Whether a parent has any other children that received the NCMP + Child's age + Highest qualification achieved by parent + Parent's role (i.e., mother/father).* Assuming all variables are used.

The models were always developed hierarchically; in other words, the first model to test was:

Outcome variable ~ Child's weight category in the letter

Other variables were added into the model in the order as presented in Table 15 in Appendix 3.6.3 until yielding the complete specification as expressed in the paragraph above.

3.7 Study 2 – Findings Regarding the User Experience

The following selected findings show additional information complementary to the results presented in the main text. These provide further information, such as diagnostic tests that were carried out or outlier management.

3.7.1 Attractiveness

The visual representation below (Figure 84) shows plots with the outcome variable (UEQ: Attractiveness) regressed on each explanatory variable. Most lines do not show any interesting association; however, panel A seems to show the strongest association between the outcome and explanatory variables.

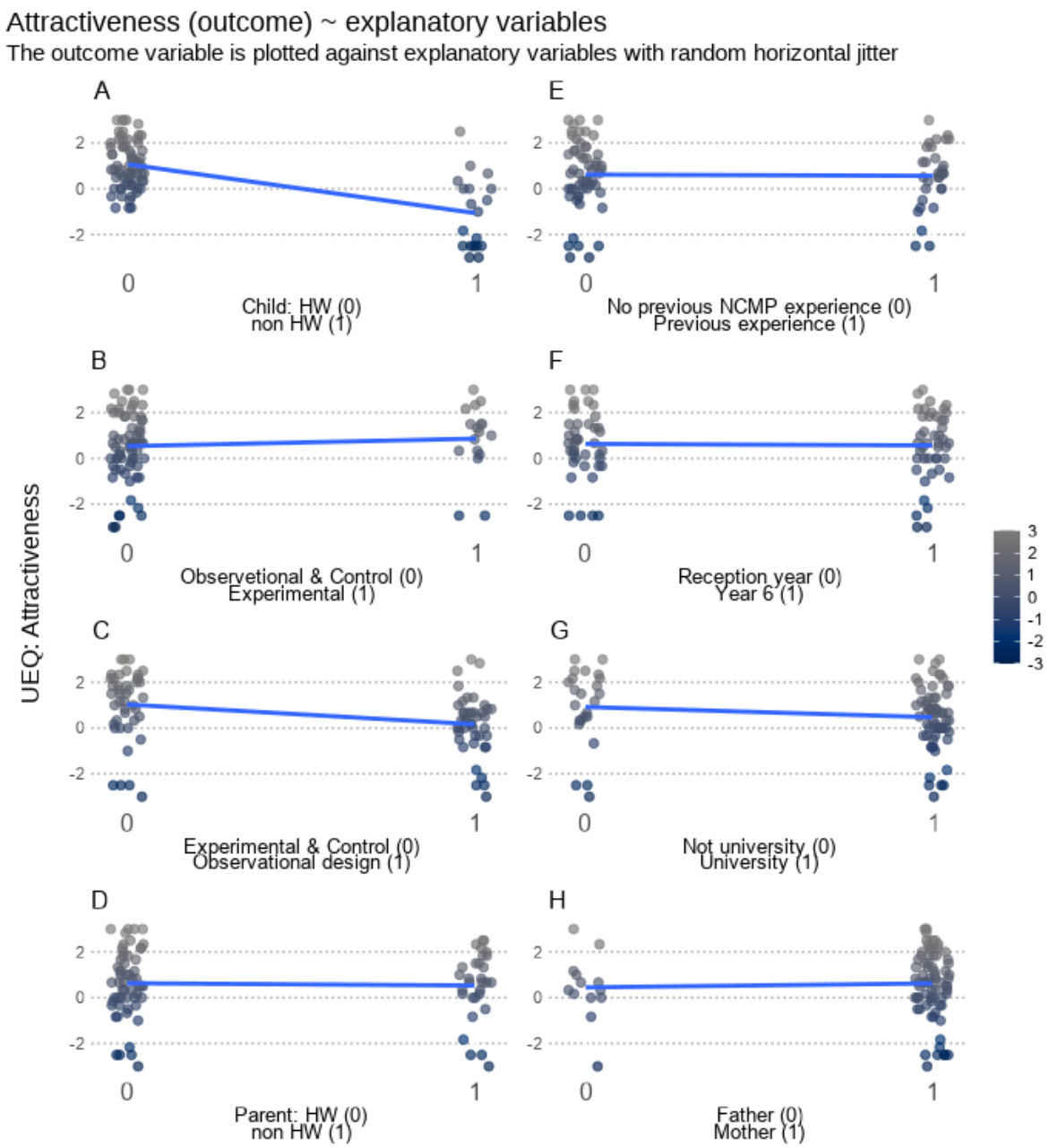


Figure 84: Attractiveness and Other Explanatory Variables

Seven models were tested against each other, and the best performing model was selected (with explanatory variables included hierarchically). Table 16 below shows the statistics of each model and the corresponding explanatory variable on the outcome variable. The interpretation provided here applies to all of the upcoming models. Generally, the coefficient is preferred for models that show significant explanatory variables and SE below (but optimally lower than ½ of the coefficient). The explanatory variables in the table below meeting such criteria were the weight version of the letter and the design version – both significant and below the set alpha level of 0.05 and with reasonable SE.

Table 16: Models Comparison – Attractiveness

Coefficients	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
(Intercept)	1.07	1.46	1.58	1.63	1.51	1.72	1.45
SE	0.14	0.23	0.24	0.26	0.37	0.39	0.47
Pr(>|z|)	0	0	0	0	0	0	0
Child WeightCatLetter non HW	-2.13	-2.05	-2.09	-2.11	-2.15	-2.17	-2.2
SE	0.31	0.3	0.3	0.3	0.31	0.31	0.31
Pr(>|z|)	0	0	0	0	0	0	0
Design VersionExperimental	*	-0.11	-0.06	-0.07	0.06	0.18	0.15
SE	*	0.35	0.35	0.36	0.46	0.46	0.46
Pr(>|z|)	*	0.75	0.85	0.84	0.89	0.7	0.74
Design VersionObservational	*	-0.77	-0.78	-0.76	-0.69	-0.58	-0.58
SE	*	0.28	0.28	0.28	0.32	0.33	0.33
Pr(>|z|)	*	0.01	0.01	0.01	0.03	0.08	0.07
Parent Weight Stat non HW	*	*	-0.35	-0.35	-0.35	-0.39	-0.44
SE	*	*	0.26	0.26	0.26	0.26	0.26
Pr(>|z|)	*	*	0.18	0.17	0.18	0.14	0.1
Parent Other Children Yes	*	*	*	-0.14	-0.16	-0.1	-0.14
SE	*	*	*	0.26	0.27	0.27	0.27
Pr(>|z|)	*	*	*	0.59	0.54	0.71	0.61
Child Age Year 6 (aged 10 - 11)	*	*	*	*	0.15	0.16	0.11
SE	*	*	*	*	0.32	0.32	0.33
Pr(>|z|)	*	*	*	*	0.64	0.62	0.72
Parent Qualification University	*	*	*	*	*	-0.41	-0.38
SE	*	*	*	*	*	0.29	0.29
Pr(>|z|)	*	*	*	*	*	0.15	0.19
Parent Role Mother	*	*	*	*	*	*	0.37
SE	*	*	*	*	*	*	0.36
Pr(>|z|)	*	*	*	*	*	*	0.3

When compared (Table 17 below), model 2 seemed to perform the best.

Table 17: Models Comparison – Attractiveness

Model	R. Squared	Adj.R. Squared	Sigma	Statistic	P.Value	Df	Loglik	AIC	BIC	Deviance	Df. Residual
1	0.37	0.36	1.17	48.69	0	2	-134.88	275.77	283.13	115.96	84
2	0.43	0.41	1.13	20.47	0	4	-130.51	271.02	283.29	104.75	82
3	0.44	0.41	1.12	15.96	0	5	-129.56	271.11	285.84	102.45	81
4	0.44	0.41	1.13	12.71	0	6	-129.40	272.80	289.99	102.09	80
5	0.44	0.40	1.14	10.53	0	7	-129.28	274.57	294.20	101.80	79
6	0.46	0.41	1.13	9.43	0	8	-128.18	274.35	296.44	99.22	78
7	0.47	0.41	1.13	8.39	0	9	-127.58	275.17	299.71	97.86	77

The second model was also favoured given the significant statistics as presented in Table 18 below. The model seemed to be improved with the inclusion of an additional explanatory variable.

Table 18: Models Comparison – Attractiveness

Model	Res.Df	Rss	Df	Sumsq	P.Value
1	84	115.96	*	*	*
2	82	104.75	2	11.22	0.01
3	81	102.45	1	2.29	0.18
4	80	102.09	1	0.37	0.59
5	79	101.8	1	0.28	0.64
6	78	99.22	1	2.59	0.15
7	77	97.86	1	1.36	0.3

The AIC and BIC values are expected to be minimised (the lower values are preferable). Figure 85 shows the visual confirmation to the previous statistics and confirms model 2 (df = 5) as favourable.

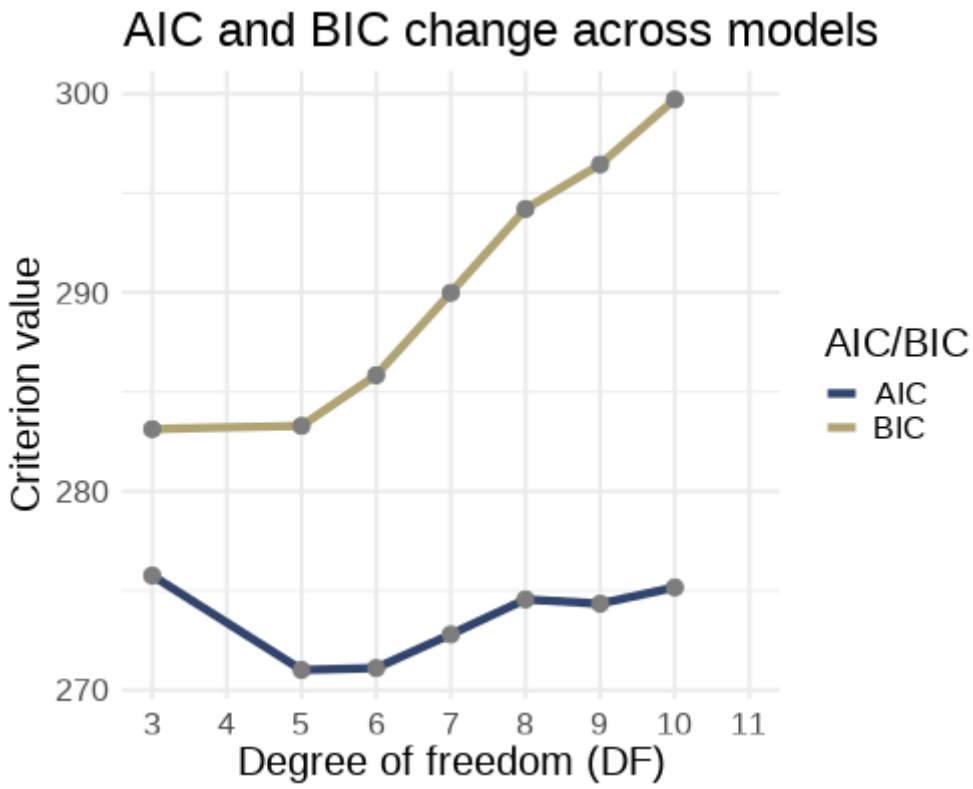


Figure 85: AIC/BIC of Attractiveness Models

Once the model was selected, several diagnostic tests were performed to measure the model (Figure 86 below). Residual plots showed no unusual patterns; however, few outliers were identified in the model.

Diagnostics

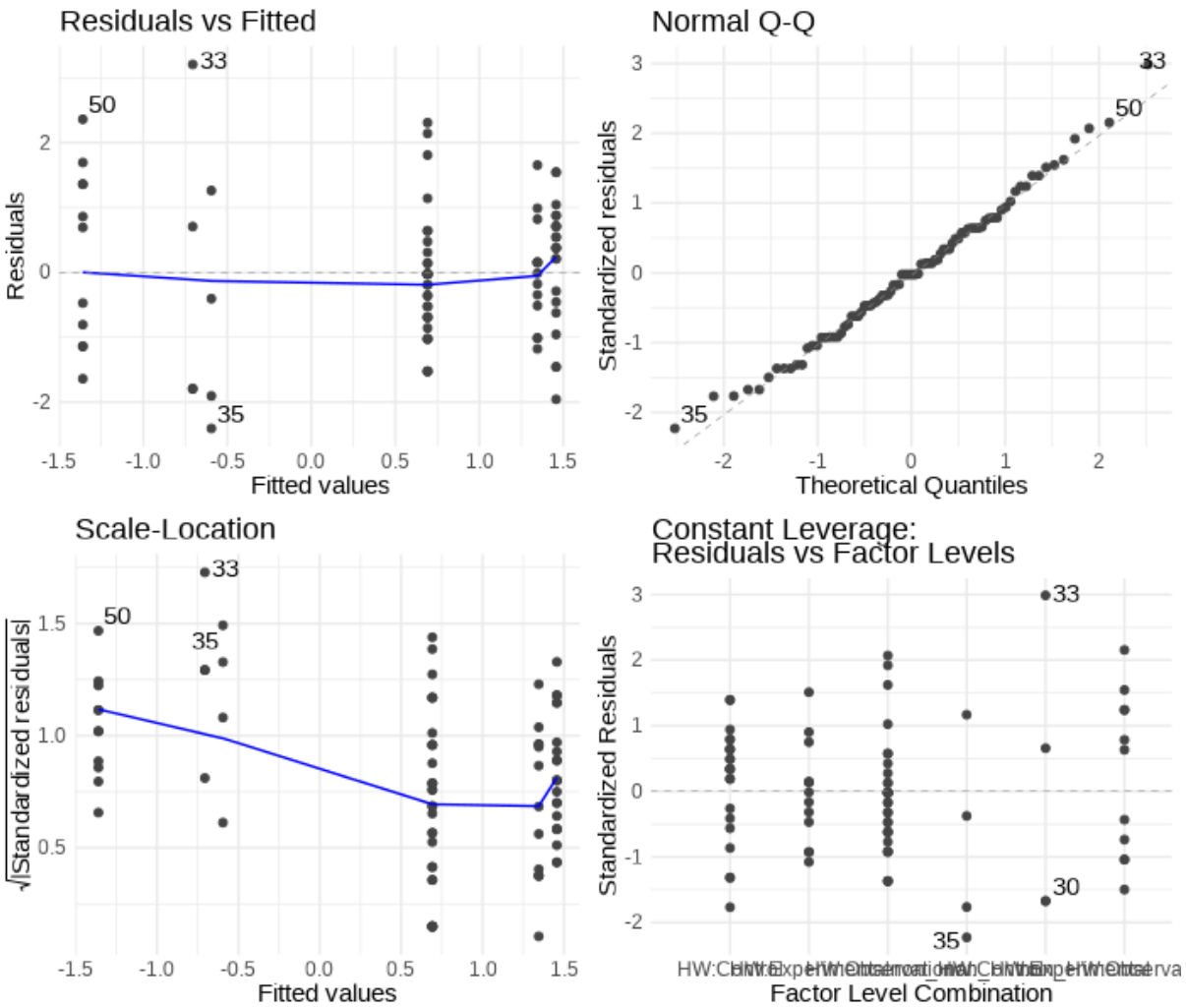


Figure 86: Diagnostic of Attractiveness Models (1)

Further outlier assessment (Figure 87 below) showed several cases (33, 35, and 50) as possible outliers, some identified in the residual plots.

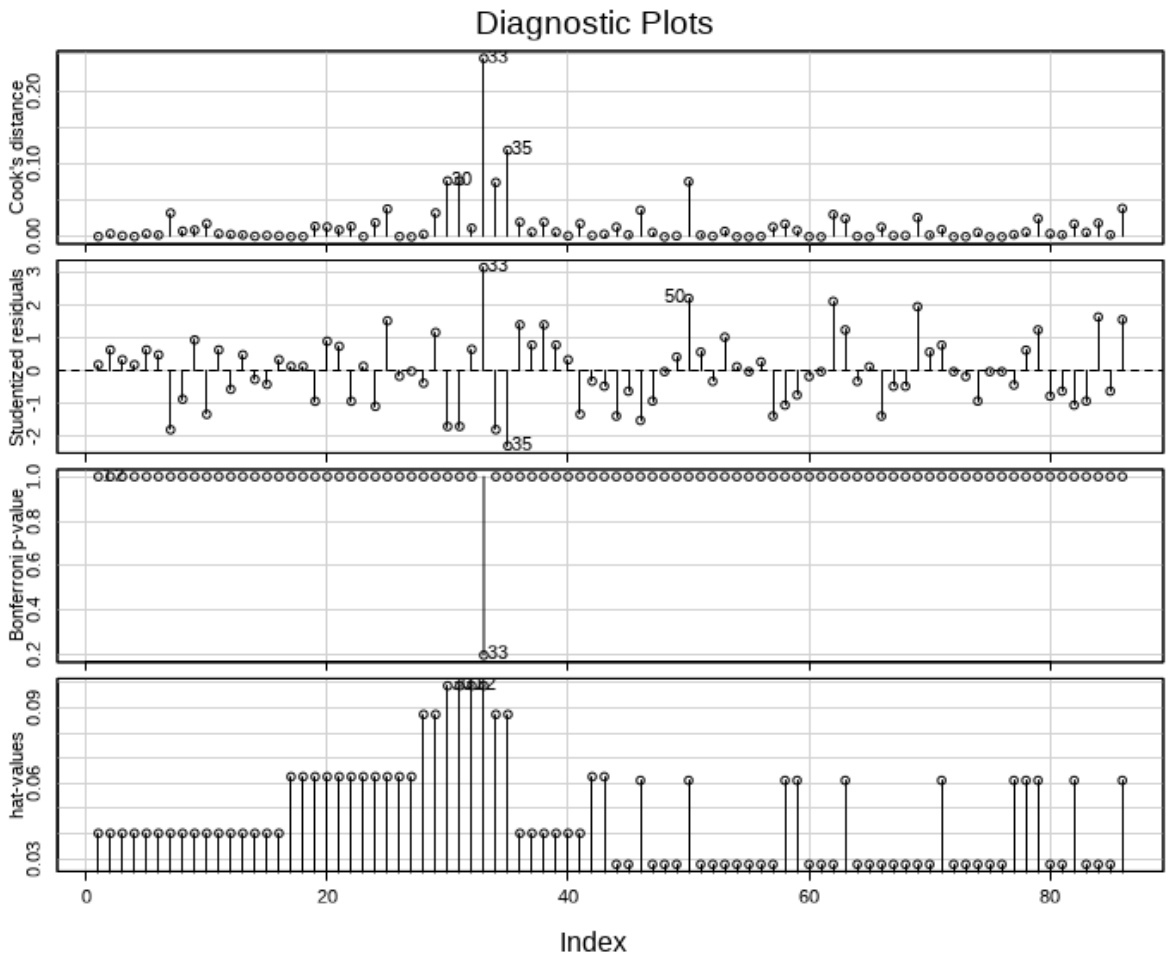


Figure 87: Diagnostic of Attractiveness Models (2)

Further outlier assessment identified case 33 as a significant outlier; therefore, the case was removed from the final model shown below (this was done here and further below by fitting a model without the case and observing a change in coefficients).

The following tables show the regression estimates and diagnostics of the final model for Attractiveness.

Table 19: Final Model Estimates for Attractiveness

Term	Estimate	Std. Error	Statistic	P.Value	Conf.Low	Conf. High
(Intercept)	1.49	0.22	6.91	0.00	1.06	1.91
Child WeightCatLetter non HW	-2.24	0.29	-7.80	0.00	-2.81	-1.67
Design VersionExperimental	-0.31	0.34	-0.89	0.37	-0.98	0.37
Design VersionObservational	-0.75	0.27	-2.78	0.01	-1.28	-0.21

Table 20: Final Diagnostics for Attractiveness

R. Squared	Adj.R. Squared	Sigma	Statistic	P.Value	Df	Loglik	AIC	BIC	Deviance	Df. Residual
0.48	0.46	1.07	24.93	0	4	-124.59	259.18	271.39	93.34	81

3.7.2 Dependability

As per the following Figure 88, it is possible to see that the child weight was likely to be a significant explanatory variable in this model with a similar pattern.

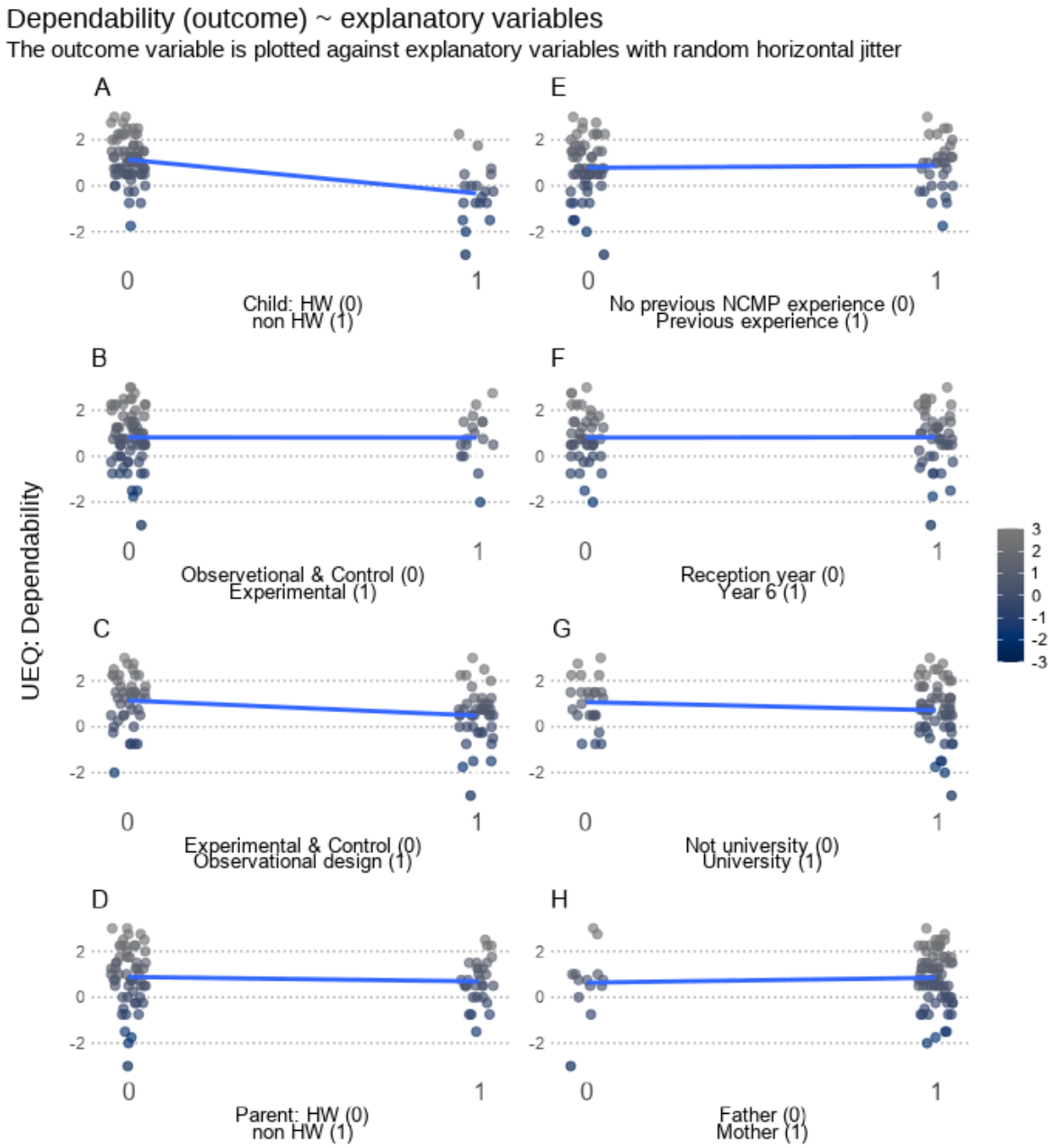


Figure 88: Dependability and Other Explanatory Variables

The following Table 21 shows that the weight category was associated with the explanatory variable and the observational version of the letter.

Table 21: Models Comparison – Dependability

Coefficients	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
(Intercept)	1.14	1.58	1.7	1.69	1.77	1.92	1.66
SE	0.12	0.19	0.21	0.22	0.31	0.34	0.41
Pr(>|z|)	0	0	0	0	0	0	0
Child WeightCatLetter non HW	-1.47	-1.39	-1.43	-1.42	-1.4	-1.42	-1.44
SE	0.26	0.25	0.25	0.26	0.27	0.27	0.26
Pr(>|z|)	0	0	0	0	0	0	0
Design VersionExperimental	*	-0.44	-0.4	-0.4	-0.48	-0.4	-0.42
SE	*	0.3	0.3	0.3	0.39	0.4	0.4
Pr(>|z|)	*	0.14	0.19	0.19	0.22	0.31	0.29
Design VersionObservational	*	-0.74	-0.75	-0.75	-0.79	-0.72	-0.72
SE	*	0.24	0.24	0.24	0.27	0.28	0.28
Pr(>|z|)	*	0	0	0	0	0.01	0.01
Parent Weight Stat non HW	*	*	-0.35	-0.34	-0.34	-0.37	-0.42
SE	*	*	0.22	0.22	0.22	0.22	0.23
Pr(>|z|)	*	*	0.12	0.12	0.12	0.1	0.07
Parent Other Children Yes	*	*	*	0.03	0.04	0.09	0.05
SE	*	*	*	0.22	0.23	0.23	0.23
Pr(>|z|)	*	*	*	0.9	0.85	0.7	0.82
Child Age Year 6 (aged 10 - 11)	*	*	*	*	-0.1	-0.09	-0.14
SE	*	*	*	*	0.28	0.28	0.28
Pr(>|z|)	*	*	*	*	0.72	0.74	0.62
Parent Qualification University	*	*	*	*	*	-0.29	-0.26
SE	*	*	*	*	*	0.25	0.25
Pr(>|z|)	*	*	*	*	*	0.24	0.3
Parent Role Mother	*	*	*	*	*	*	0.36
SE	*	*	*	*	*	*	0.31
Pr(>|z|)	*	*	*	*	*	*	0.24

Comparing the models, similarly to the previous outcome variable, model 2 seemed to be the most reasonable here. It achieved the lowest BIC, the second-lowest AIC, and acceptable SE. Table 22 shows that the second model explains approximately 32% of the variation, and the Table 23 shows that model 2 performed better than model 1.

Table 22: Models Comparison – Dependability

Model	R. Squared	Adj.R. Squared	Sigma	Statistic	P.Value	Df	Loglik	AIC	BIC	Deviance	Df. Residual
1	0.27	0.26	1.01	31.44	0	2	-121.80	249.59	256.95	85.53	84
2	0.35	0.32	0.97	14.47	0	4	-117.20	244.40	256.68	76.87	82
3	0.37	0.33	0.96	11.66	0	5	-115.91	243.83	258.55	74.60	81
4	0.37	0.33	0.97	9.22	0	6	-115.90	245.81	262.99	74.58	80
5	0.37	0.32	0.97	7.62	0	7	-115.84	247.67	267.31	74.47	79
6	0.38	0.32	0.97	6.76	0	8	-115.08	248.15	270.24	73.16	78
7	0.39	0.33	0.97	6.12	0	9	-114.30	248.59	273.14	71.85	77

Table 23: Models Comparison – Dependability

Model	Res.Df	Rss	Df	Sumsq	P.Value
1	84	85.53	*	*	*
2	82	76.87	2	8.67	0.01
3	81	74.6	1	2.27	0.12
4	80	74.58	1	0.01	0.9
5	79	74.47	1	0.12	0.72
6	78	73.16	1	1.31	0.24
7	77	71.85	1	1.31	0.24

The visualisation of AIC and BIC (Figure 89) change across all models confirms the initial observation that the second model (DF = 5) performs the best from all of the available models.

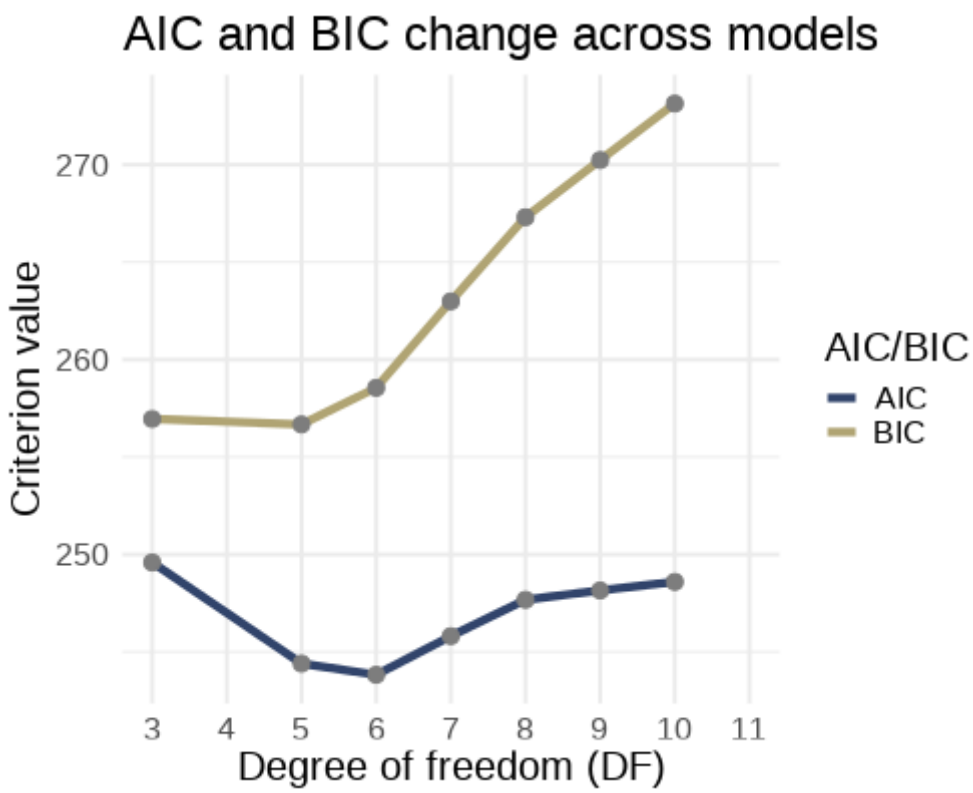


Figure 89: AIC/BIC of Dependability Models

The following diagnostics in Figure 90 show normally distributed residuals, but a few cases seem to be outliers as indicated in the QQ Plots.

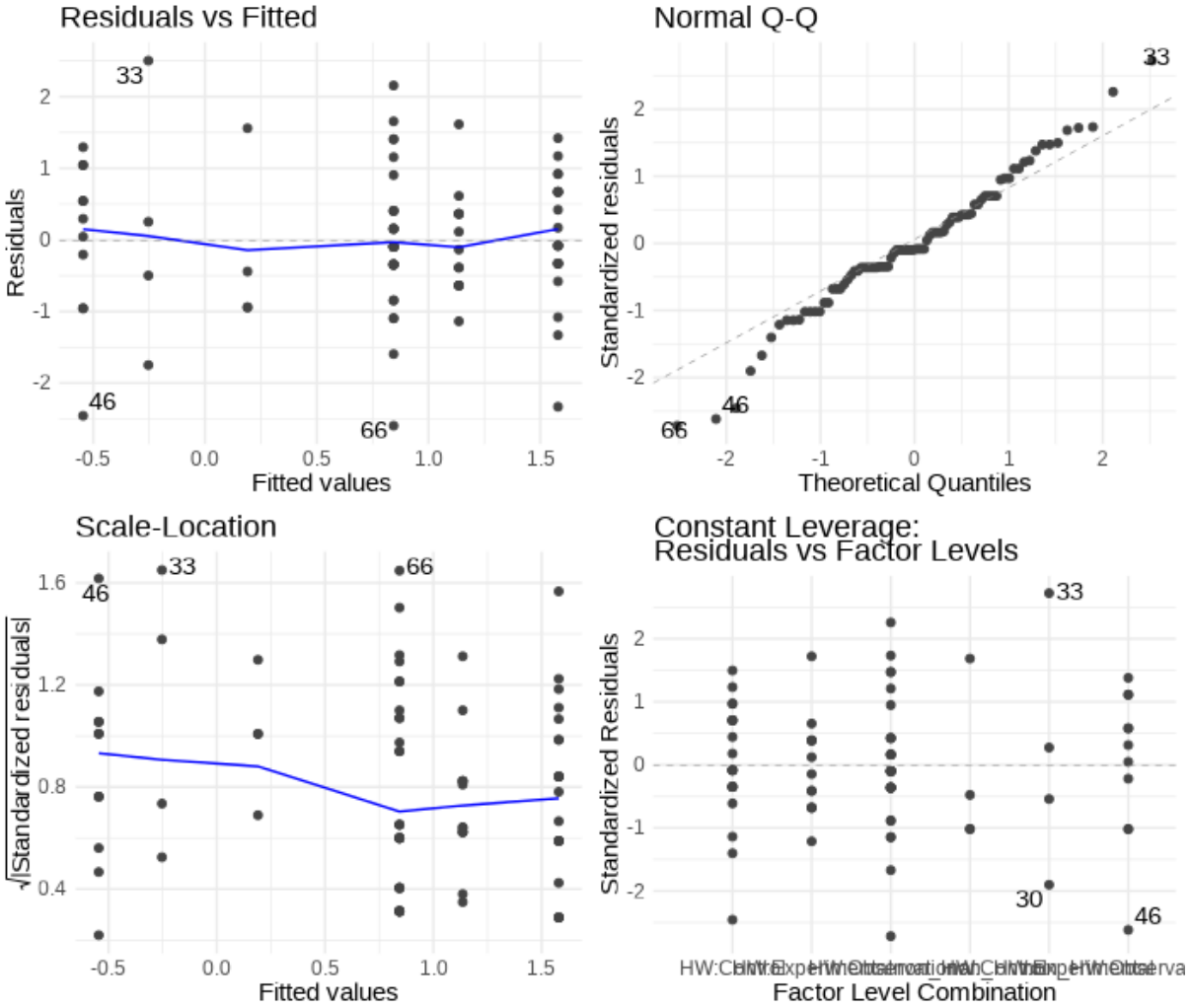


Figure 90: Diagnostic of Dependability Models (1)

Further outlier diagnostics (Figure 91) indicate that cases 30, 33, 46, and 66 could be outliers.

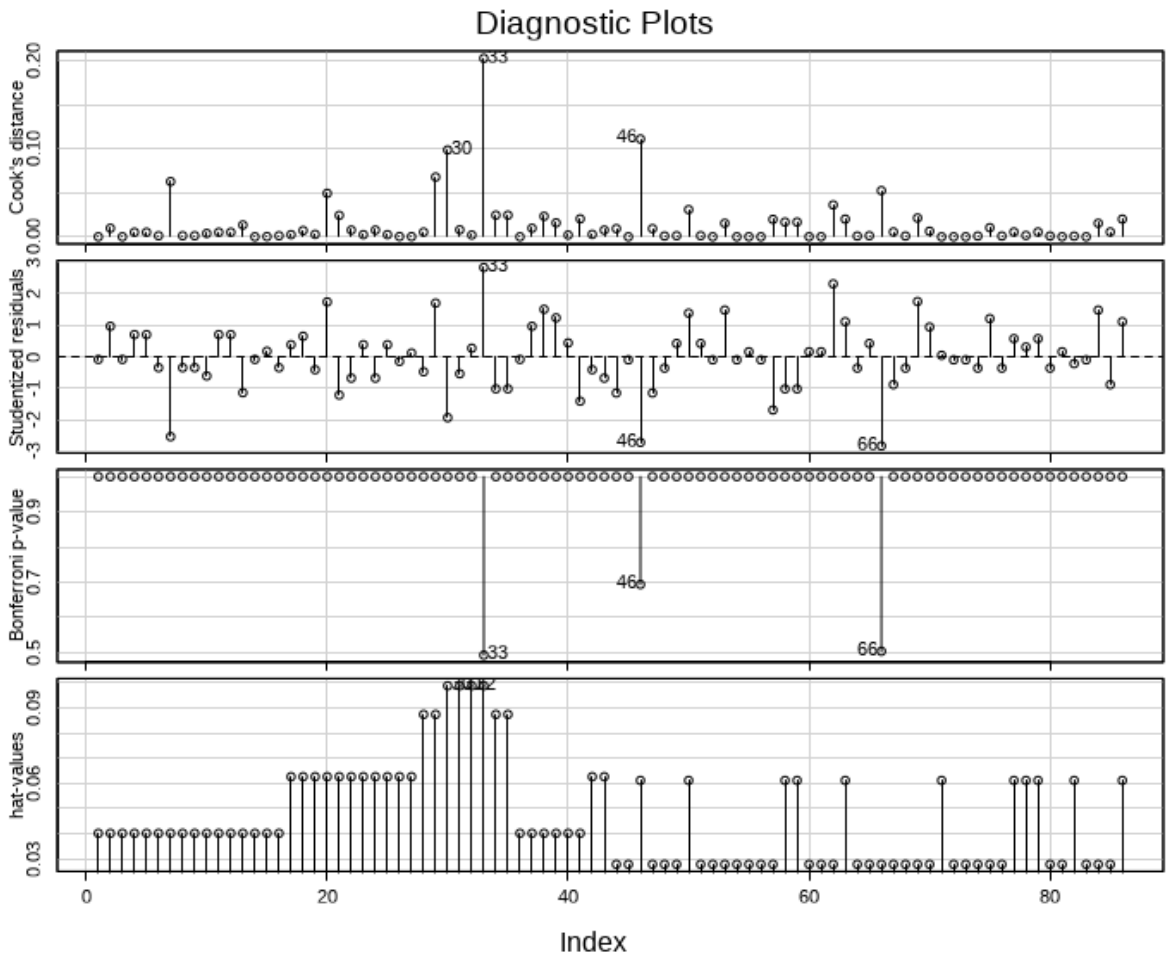


Figure 91: Diagnostic of Dependability Models (2)

Case 33 was deemed an influential outlier after the coefficients were investigated, and a few of the outliers candidates were removed and compared with the base model. Therefore, case 33 was identified as an outlier and removed.

The following tables (Tables 24 and 25) show the regression estimates and diagnostics of the final model for Dependability.

Table 24: Final Model Estimates for Dependability

Term	Estimate	Std. Error	Statistic	P.Value	Conf.Low	Conf. High
(Intercept)	1.60	0.19	8.60	0.00	1.23	1.97
Child WeightCatLetter non HW	-1.53	0.25	-6.18	0.00	-2.03	-1.04
Design VersionExperimental	-0.60	0.30	-2.01	0.05	-1.18	-0.01
Design VersionObservational	-0.72	0.23	-3.10	0.00	-1.18	-0.26

Table 25: Final Model Diagnostics for Dependability

R. Squared	Adj.R. Squared	Sigma	Statistic	P.Value	Df	Loglik	AIC	BIC	Deviance	Df. Residual
0.39	0.37	0.93	17.59	0	4	-112.31	234.61	246.83	69.91	81

3.7.3 Efficiency

Figure 92 visualises the associations between the explanatory variables and the outcome variable. The figure indicates a stronger association for the weight category of the letter but less so for the other variables (this seemed to be a trend across all of the models).

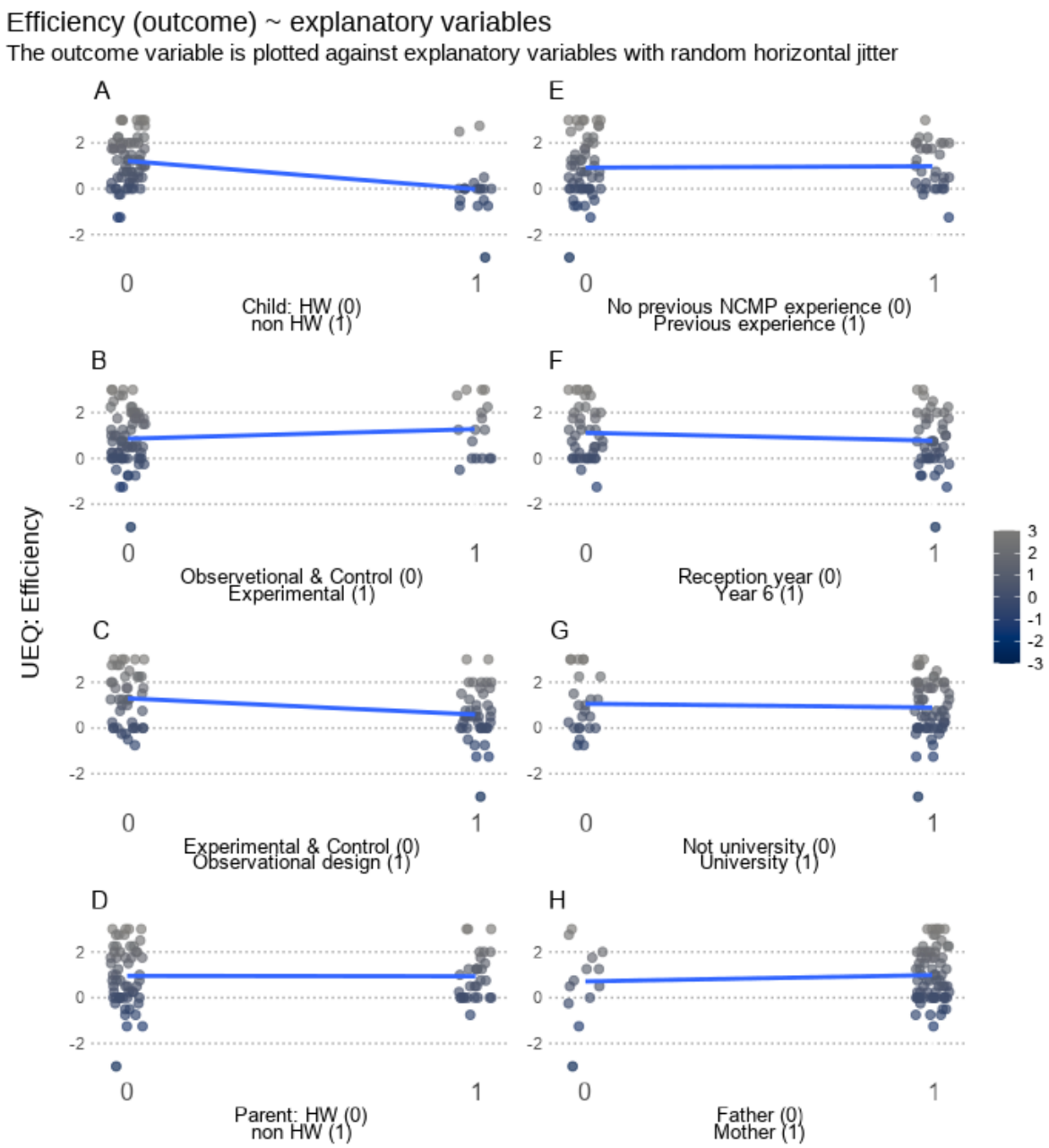


Figure 92: Efficiency and Other Explanatory Variables

The models were significant for the letter weight category with a coefficient around the absolute value of 1.20 and the design version. The observational design was also a significant predictor, but no further other variables were significant (Table 26).

Table 26: Models Comparison – Efficiency

Coefficients	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
(Intercept)	1.22	1.49	1.56	1.54	1.85	1.91	1.57
SE	0.13	0.21	0.23	0.25	0.34	0.37	0.44
Pr(>|z|)	0	0	0	0	0	0	0
Child WeightCatLetter non HW	-1.23	-1.17	-1.19	-1.18	-1.09	-1.1	-1.12
SE	0.28	0.28	0.28	0.28	0.29	0.29	0.29
Pr(>|z|)	0	0	0	0	0	0	0
Design VersionExperimental	*	0.07	0.09	0.1	-0.26	-0.23	-0.25
SE	*	0.33	0.33	0.33	0.43	0.44	0.44
Pr(>|z|)	*	0.84	0.78	0.77	0.55	0.6	0.56
Design VersionObservational	*	-0.6	-0.6	-0.61	-0.79	-0.76	-0.76
SE	*	0.26	0.26	0.27	0.3	0.31	0.31
Pr(>|z|)	*	0.02	0.02	0.02	0.01	0.01	0.01
Parent Weight Stat non HW	*	*	-0.19	-0.19	-0.18	-0.19	-0.26
SE	*	*	0.24	0.24	0.24	0.25	0.25
Pr(>|z|)	*	*	0.44	0.45	0.45	0.43	0.3
Parent Other Children Yes	*	*	*	0.06	0.13	0.14	0.1
SE	*	*	*	0.24	0.25	0.25	0.25
Pr(>|z|)	*	*	*	0.8	0.61	0.57	0.7
Child Age Year 6 (aged 10 - 11)	*	*	*	*	-0.4	-0.39	-0.45
SE	*	*	*	*	0.3	0.3	0.31
Pr(>|z|)	*	*	*	*	0.19	0.2	0.14
Parent Qualification University	*	*	*	*	*	-0.11	-0.07
SE	*	*	*	*	*	0.27	0.27
Pr(>|z|)	*	*	*	*	*	0.68	0.8
Parent Role Mother	*	*	*	*	*	*	0.46
SE	*	*	*	*	*	*	0.33
Pr(>|z|)	*	*	*	*	*	*	0.17

Further model comparisons in Table 27 and Table 28 show that the second model was further improved by including an additional variable. This was indicated by lower AIC, similar BIC, increase in R Squared, and significant Chi-Squared value.

Table 27: Models Comparison – Efficiency

Model	R. Squared	Adj.R. Squared	Sigma	Statistic	P.Value	Df	Loglik	AIC	BIC	Deviance	Df. Residual
1	0.18	0.17	1.09	18.91	0	2	-128.26	262.53	269.89	99.42	84
2	0.25	0.22	1.05	9.21	0	4	-124.51	259.02	271.30	91.11	82
3	0.26	0.22	1.06	7.02	0	5	-124.19	260.39	275.11	90.44	81
4	0.26	0.21	1.06	5.56	0	6	-124.16	262.32	279.50	90.37	80
5	0.27	0.22	1.06	4.96	0	7	-123.24	262.47	282.11	88.45	79
6	0.28	0.21	1.06	4.23	0	8	-123.15	264.29	286.38	88.26	78
7	0.29	0.22	1.06	3.99	0	9	-122.09	264.19	288.73	86.13	77

Table 28: Models Comparison – Efficiency

Model	Res.Df	Rss	Df	Sumsq	P.Value
1	84	99.42	*	*	*
2	82	91.11	2	8.31	0.02
3	81	90.44	1	0.67	0.44
4	80	90.37	1	0.07	0.8
5	79	88.45	1	1.92	0.19
6	78	88.26	1	0.19	0.68
7	77	86.13	1	2.13	0.17

The visualisation in Figure 93 describes the change in AIC/BIC as per the additional degrees of freedom (the second model had 5 degrees of freedom). There would be more rationale to go for model 1 given the AIC/BIC, but the BIC increase seemed acceptable. Furthermore, the p-value of the model indicated the difference between models 1 and 2 was significant. The second model also allows an increase in adjusted R squared.

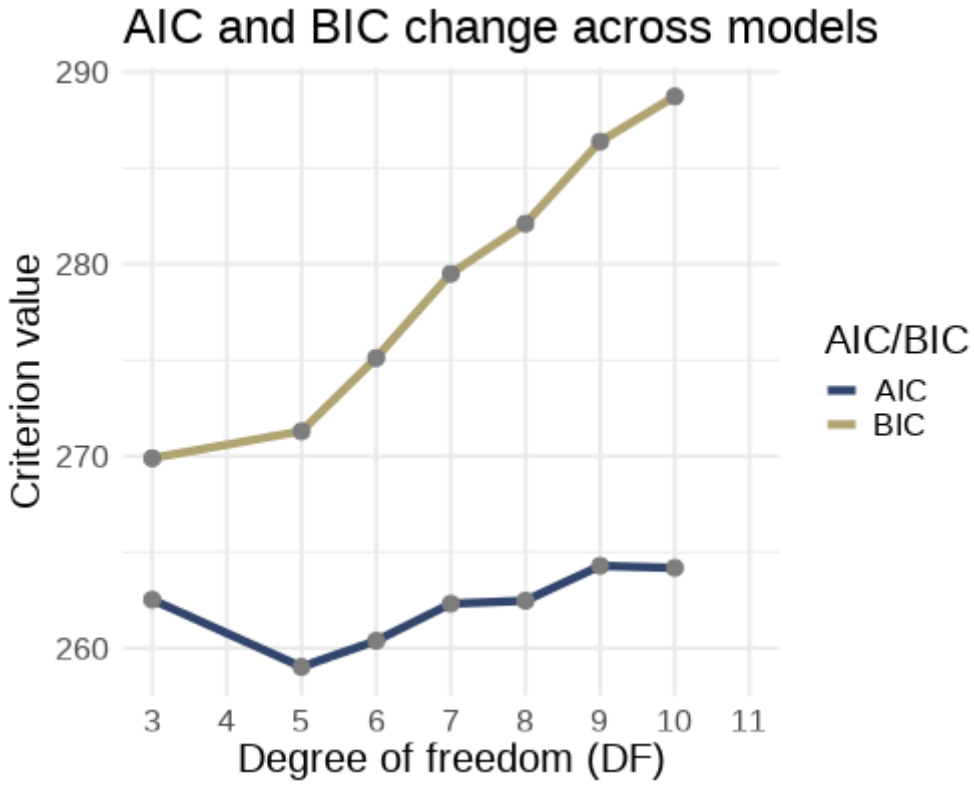


Figure 93: AIC/BIC of Efficiency Models

Model diagnostics did not reveal any unusual distribution of residual errors but suggested some outliers as per the QQ Plot (Figure 94).

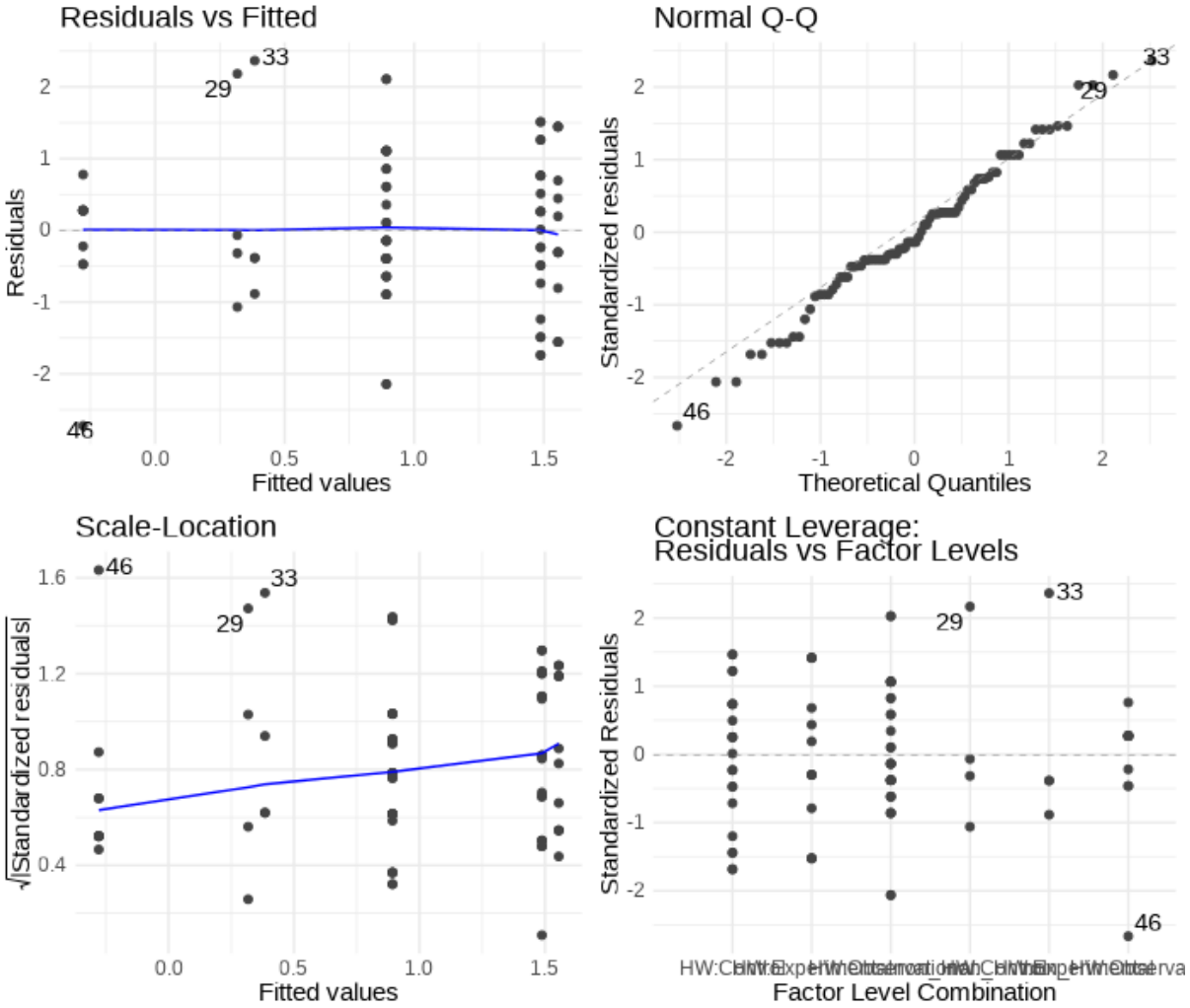


Figure 94: Diagnostic of Efficiency Models (1)

Additional diagnostics plot (Figure 95) revealed that cases 29, 33, and 46 could be potential outliers. Upon further investigation, both cases 29 and 33 were removed because these impacted coefficients of the models and therefore, removing these outliers should improve the fit. Case 46 visible in the top graph was not removed as it did not impact the coefficients.

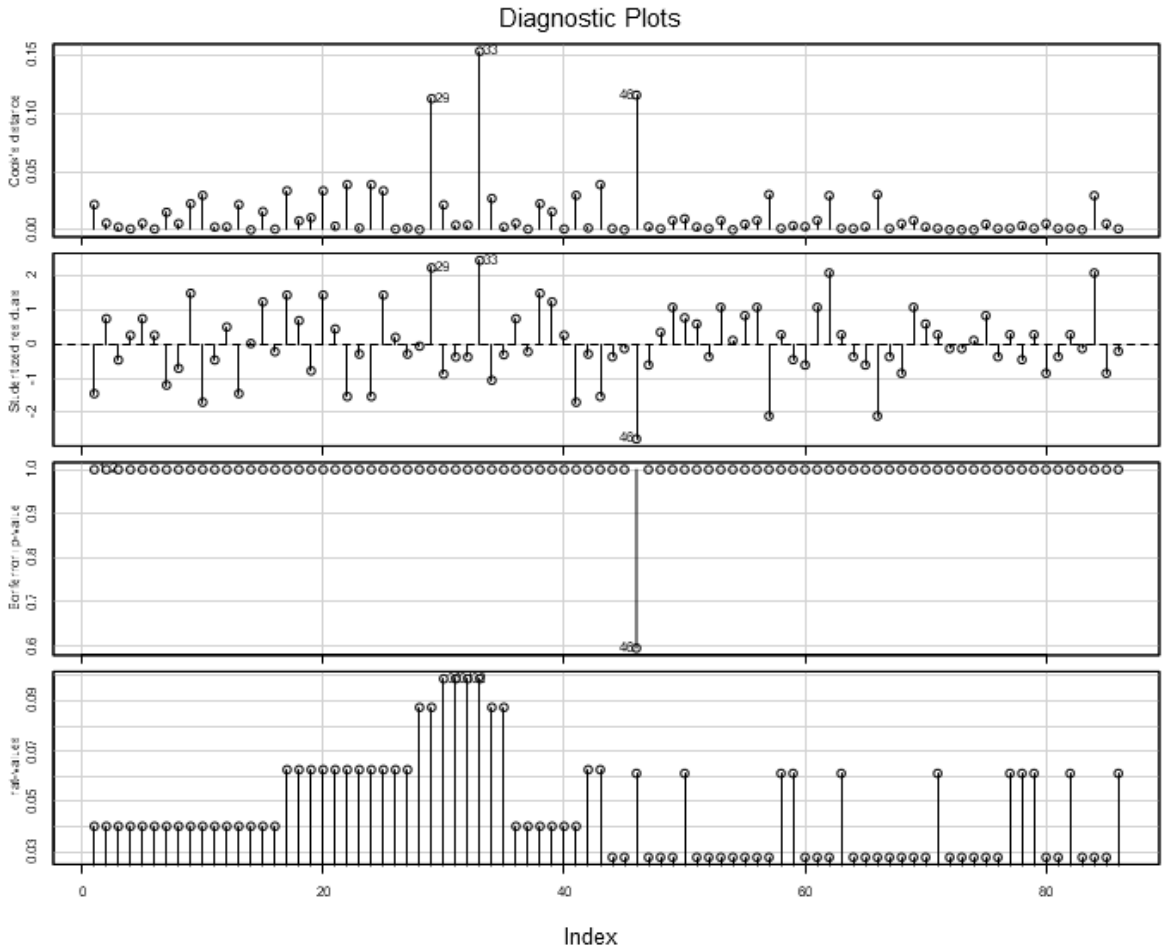


Figure 95: Diagnostic of Efficiency Models (2)

The following tables (Tables 29, 30) show the regression estimates and diagnostics of the final model for Efficiency.

Table 29: Final Model Estimates for Efficiency

Term	Estimate	Std. Error	Statistic	P.Value	Conf.Low	Conf. High
(Intercept)	1.44	0.20	7.12	0.00	1.03	1.84
Child WeightCatLetter non HW	-1.46	0.27	-5.35	0.00	-2.00	-0.92
Design VersionExperimental	0.03	0.32	0.08	0.94	-0.61	0.66
Design VersionObservational	-0.47	0.25	-1.85	0.07	-0.97	0.03

Table 30: Final Model Diagnostics for Efficiency

R. Squared	Adj.R. Squared	Sigma	Statistic	P.Value	Df	Loglik	AIC	BIC	Deviance	Df. Residual
0.32	0.29	0.99	12.44	0	4	-116.67	243.33	255.49	79.1	80

3.7.4 Novelty

Unfortunately, as per the visualisation below (Figure 96), none of the explanatory variables seemed to be associated with whether parents perceived the letters as a novel. A slightly promising variable was perhaps the education of the participant.

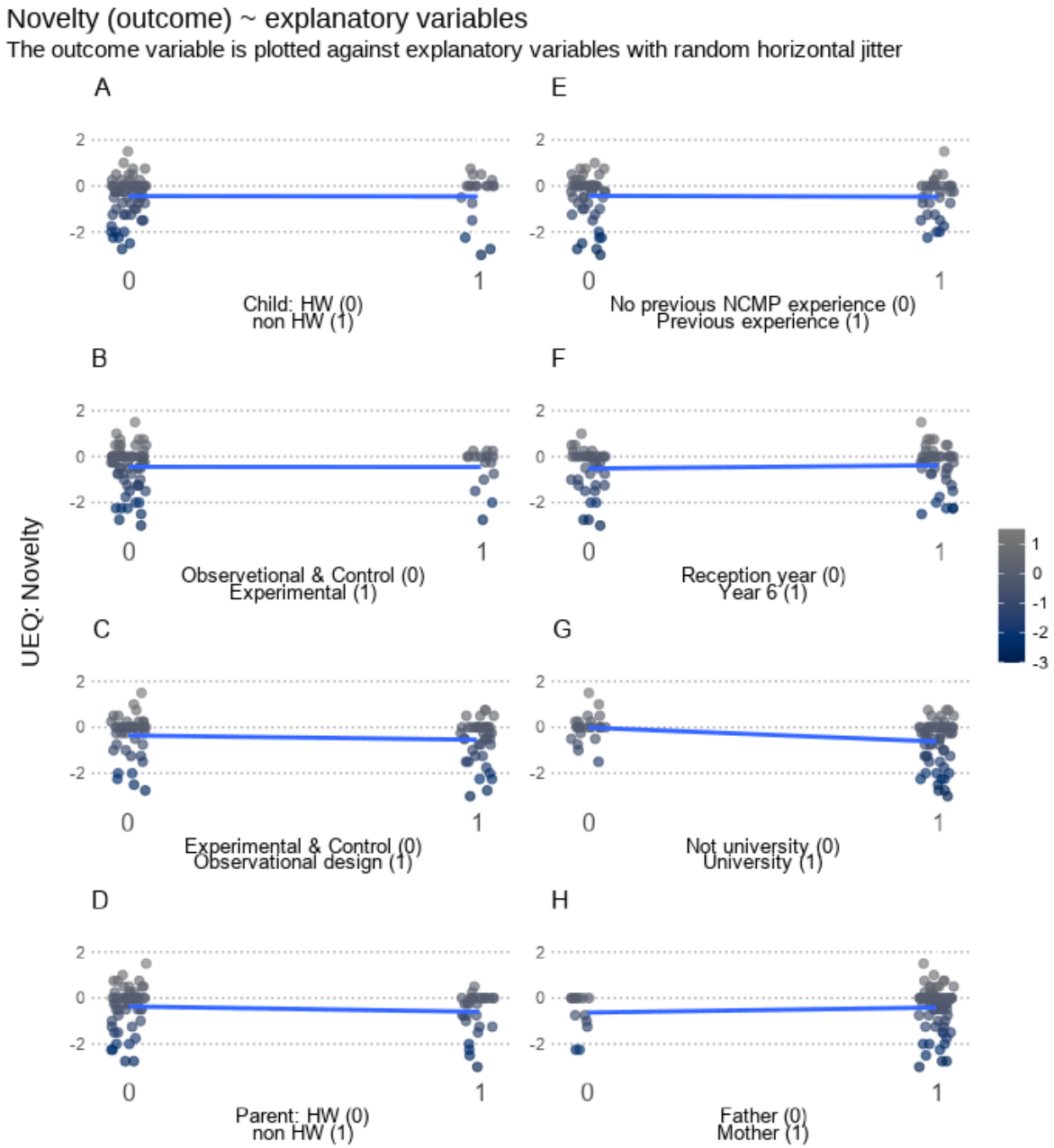


Figure 96: Novelty and Other Explanatory Variables

Further modelling as per Table 31 shows coefficients close to zero, higher SE, and not significant p-values. The only significant variable was the education in Model 6 and 7.

Table 31: Models Comparison – Novelty

Coefficients	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
(Intercept)	-0.44	-0.29	-0.2	-0.19	-0.28	0.05	-0.09
SE	0.11	0.18	0.2	0.21	0.3	0.31	0.38
Pr(>|z|)	0	0.12	0.31	0.37	0.36	0.88	0.81
Child WeightCatLetter non HW	-0.02	0.01	-0.01	-0.02	-0.04	-0.09	-0.1
SE	0.24	0.24	0.24	0.25	0.25	0.24	0.25
Pr(>|z|)	0.94	0.96	0.95	0.94	0.87	0.72	0.68
Design VersionExperimental	*	-0.17	-0.14	-0.14	-0.04	0.13	0.12
SE	*	0.29	0.29	0.29	0.38	0.37	0.37
Pr(>|z|)	*	0.56	0.64	0.64	0.91	0.72	0.74
Design VersionObservational	*	-0.25	-0.26	-0.26	-0.21	-0.04	-0.04
SE	*	0.23	0.23	0.23	0.26	0.26	0.26
Pr(>|z|)	*	0.27	0.26	0.27	0.42	0.87	0.86
Parent Weight Stat non HW	*	*	-0.25	-0.25	-0.25	-0.3	-0.33
SE	*	*	0.21	0.21	0.21	0.21	0.21
Pr(>|z|)	*	*	0.24	0.24	0.24	0.14	0.12
Parent Other Children Yes	*	*	*	-0.03	-0.04	0.05	0.04
SE	*	*	*	0.21	0.22	0.21	0.22
Pr(>|z|)	*	*	*	0.91	0.85	0.8	0.87
Child Age Year 6 (aged 10 - 11)	*	*	*	*	0.11	0.12	0.1
SE	*	*	*	*	0.27	0.26	0.26
Pr(>|z|)	*	*	*	*	0.69	0.64	0.71
Parent Qualification University	*	*	*	*	*	-0.63	-0.62
SE	*	*	*	*	*	0.23	0.23
Pr(>|z|)	*	*	*	*	*	0.01	0.01
Parent Role Mother	*	*	*	*	*	*	0.19
SE	*	*	*	*	*	*	0.28
Pr(>|z|)	*	*	*	*	*	*	0.51

Further analysis (Table 32) revealed that all of the models were relatively weak, and when adjusted for predictor number, they explained little to no variance. The models with significant variables explained about 3% to 4% per cent. In other words, this was a null finding except for models 6 and 7, where parental education was significant.

Table 32: Models Comparison – Novelty

Model	R. Squared	Adj.R. Squared	Sigma	Statistic	P.Value	Df	Loglik	AIC	BIC	Deviance	Df. Residual
1	0.00	-0.01	0.92	0.00	0.95	2	-113.64	233.28	240.65	70.76	84
2	0.01	-0.02	0.92	0.41	0.75	4	-113.01	236.02	248.29	69.73	82
3	0.03	-0.02	0.92	0.65	0.63	5	-112.29	236.57	251.30	68.56	81
4	0.03	-0.03	0.93	0.52	0.76	6	-112.28	238.56	255.74	68.55	80
5	0.03	-0.04	0.93	0.45	0.84	7	-112.19	240.39	260.02	68.42	79
6	0.12	0.04	0.89	1.52	0.17	8	-108.14	234.27	256.36	62.26	78
7	0.13	0.03	0.90	1.38	0.22	9	-107.89	235.79	260.33	61.91	77

To follow up on the analysis, it seemed worth explaining the effect of education. This variable did not seem as important in the first place. The education showed a negative association as

parents with lover education seemed to find the letter more original than parents with higher education/university level (Table 33).

Table 33: Models Comparison – Novelty

Term	Estimate	Std. Error	Statistic	P.Value
(Intercept)	-0.010	0.179	-0.058	0.954
Parent Qualification University	-0.607	0.210	-2.881	0.005

The effect was not large probably, and the model was not such a model explaining a lot of variance, only about 8% (Table 34).

Table 34: Explained Variance – Novelty

R. Squared	Adj.R. Squared	Sigma	Statistic	P.Value	Df	Loglik	AIC	BIC	Deviance	Df. Residual
0.09	0.08	0.88	8.3	0.01	2	-109.59	225.18	232.55	64.4	84

Continuing the analysis, I have included a single variable model with education and compared it with other models – only Model 6 (Presented as 7 in Table 35) showed a significant difference. Following the principle of parsimony, Model 1 was used further – acknowledging that the findings are null.

Table 35: Models Comparison – Novelty

Model	Res.Df	Rss	Df	Sumsq	P.Value
1	84	64.4	*	*	*
2	84	70.76	0	-6.36	*
3	82	69.73	2	1.03	0.53
4	81	68.56	1	1.17	0.23
5	80	68.55	1	0.01	0.9
6	79	68.42	1	0.14	0.68
7	78	62.26	1	6.16	0.01
8	77	61.91	1	0.35	0.51

Comparing the previously used models with the single variable education model showed the model with only education had the best AIC and BIC (Figure 97). The plot looks unusual because the DF of both first two models was the same, but the model with education had lower AIC and BIC, as shown in Table 36.

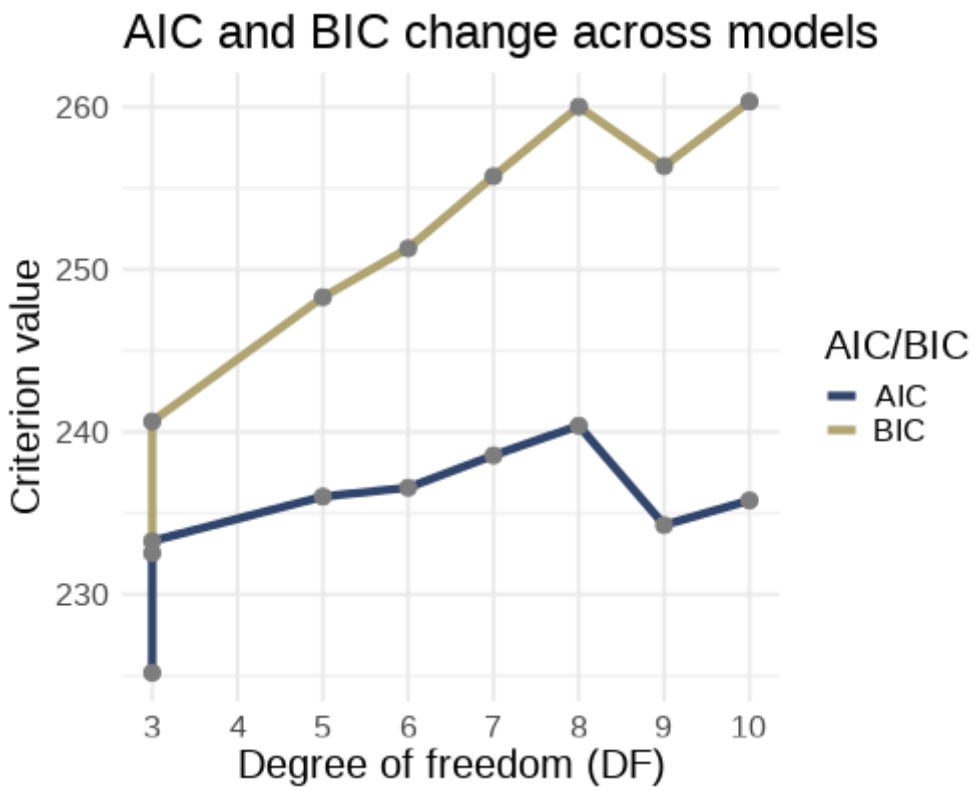


Figure 97: AIC/BIC of Novelty Models

Table 36: Models Comparison – Novelty

Model	Df	AIC/BIC	Score
Model education	3	AIC	225.1828
Model education	3	BIC	232.5459
Model 1	3	AIC	233.2834
Model 1	3	BIC	240.6465

Further diagnostics (Figure 98) were conducted on the Model education. The model showed a slight deviation from the normality of residuals and included several outliers.

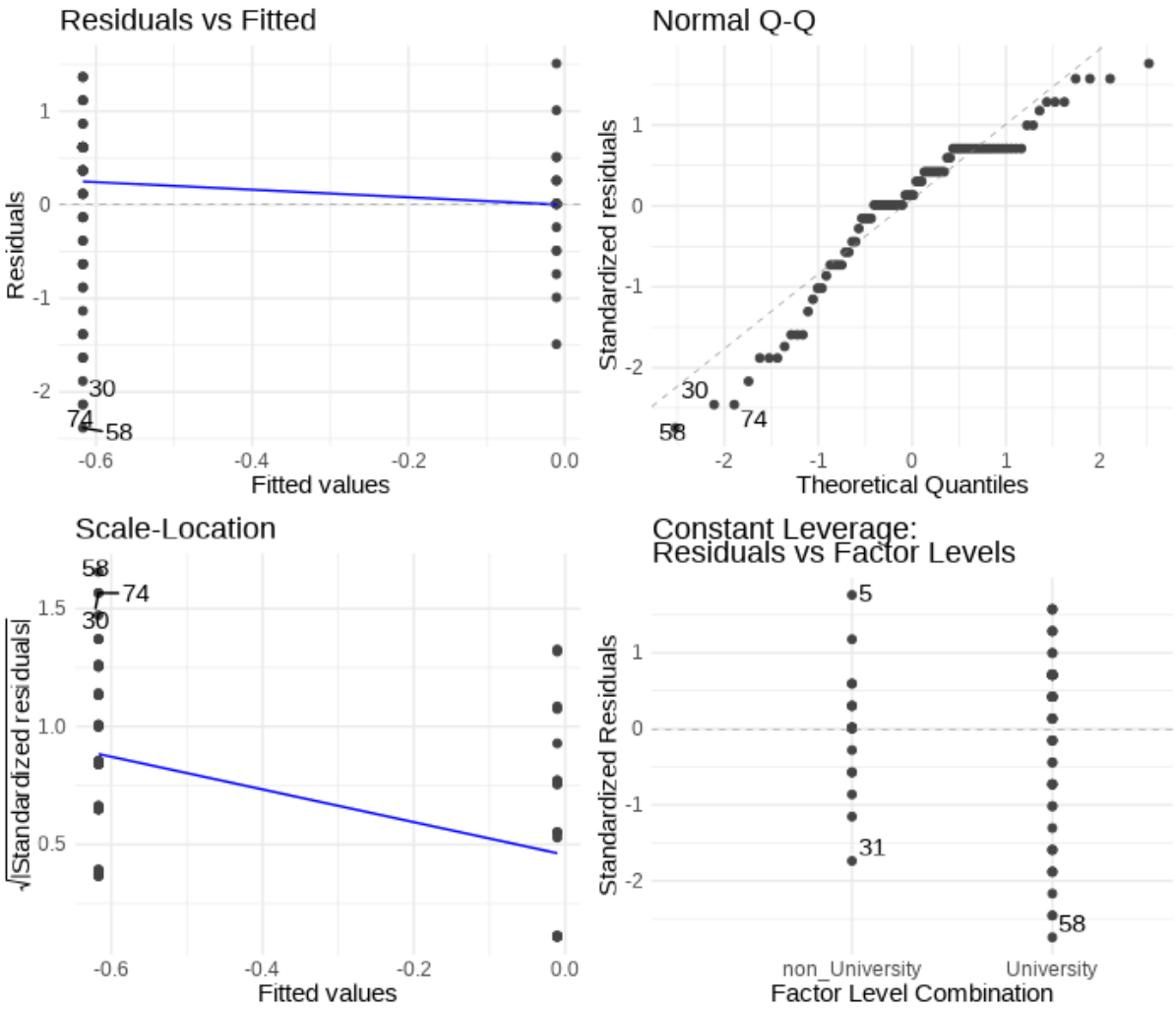


Figure 98: Diagnostic of Novelty Models (1)

Analysing the outliers further, cases 30, 58, and 74 seemed to be likely outliers (Figure 99).

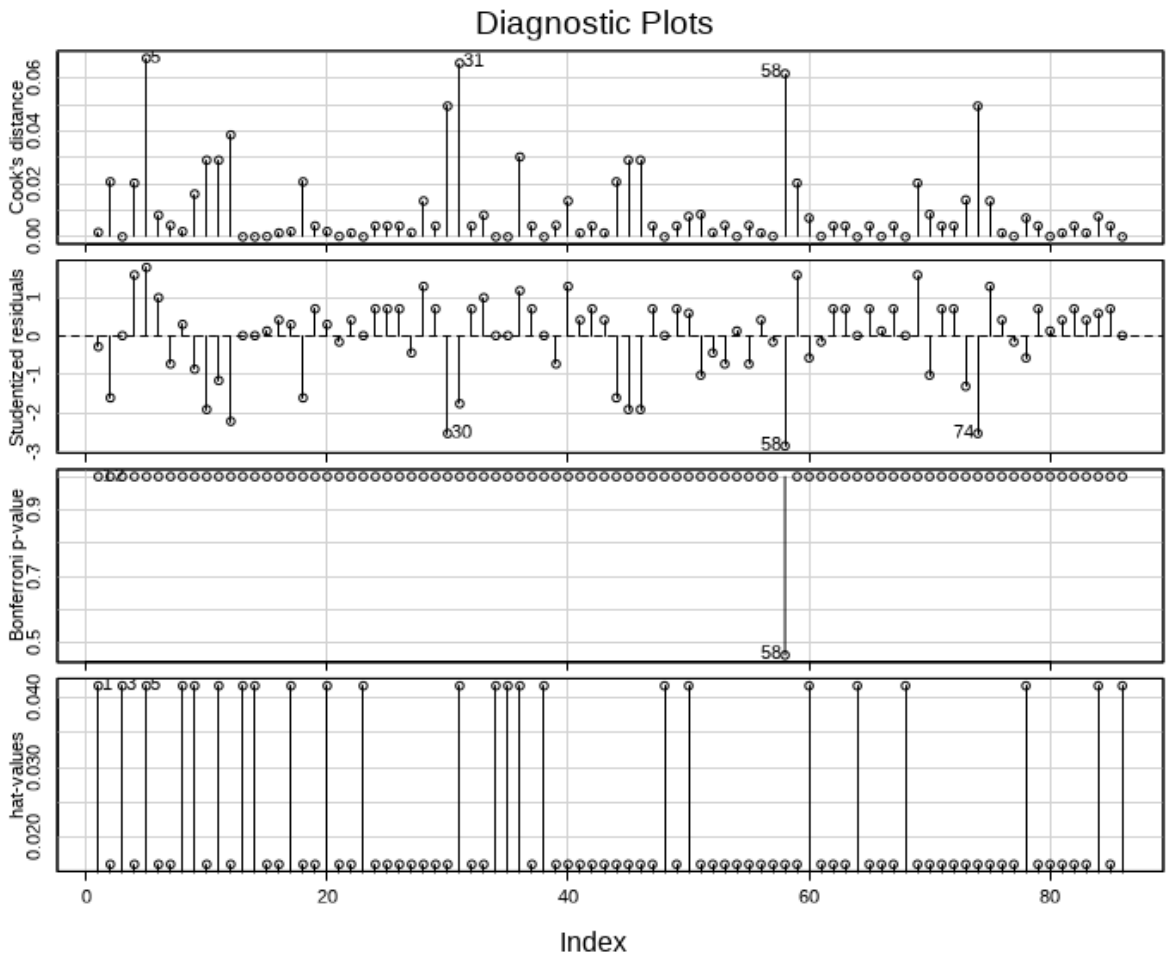


Figure 99: Diagnostic of Novelty Models (2)

I tested removing case 58 and other cases, but it had only a minor impact on the coefficients, so the original data were used for the education model.

The following Tables 37 and 38 show the regression estimates and diagnostics of the final model for Novelty

Table 37: Final Model Estimates for Novelty

Term	Estimate	Std. Error	Statistic	P.Value	Conf.Low	Conf. High
(Intercept)	-0.01	0.18	-0.06	0.95	-0.37	0.35
Parent Qualification University	-0.61	0.21	-2.88	0.01	-1.03	-0.19

Table 38: Final Model Diagnostics for Novelty

R. Squared	Adj.R. Squared	Sigma	Statistic	P.Value	Df	Loglik	AIC	BIC	Deviance	Df. Residual
0.09	0.08	0.88	8.3	0.01	2	-109.59	225.18	232.55	64.4	84

3.7.5 Perspicuity

The visualisation of association in Figure 100 below suggest that the perspicuity models were likely to follow the pattern of the previous findings. The strongest association was observed for the letter's weight category, and the weaker ones were observed with other explanatory variables.

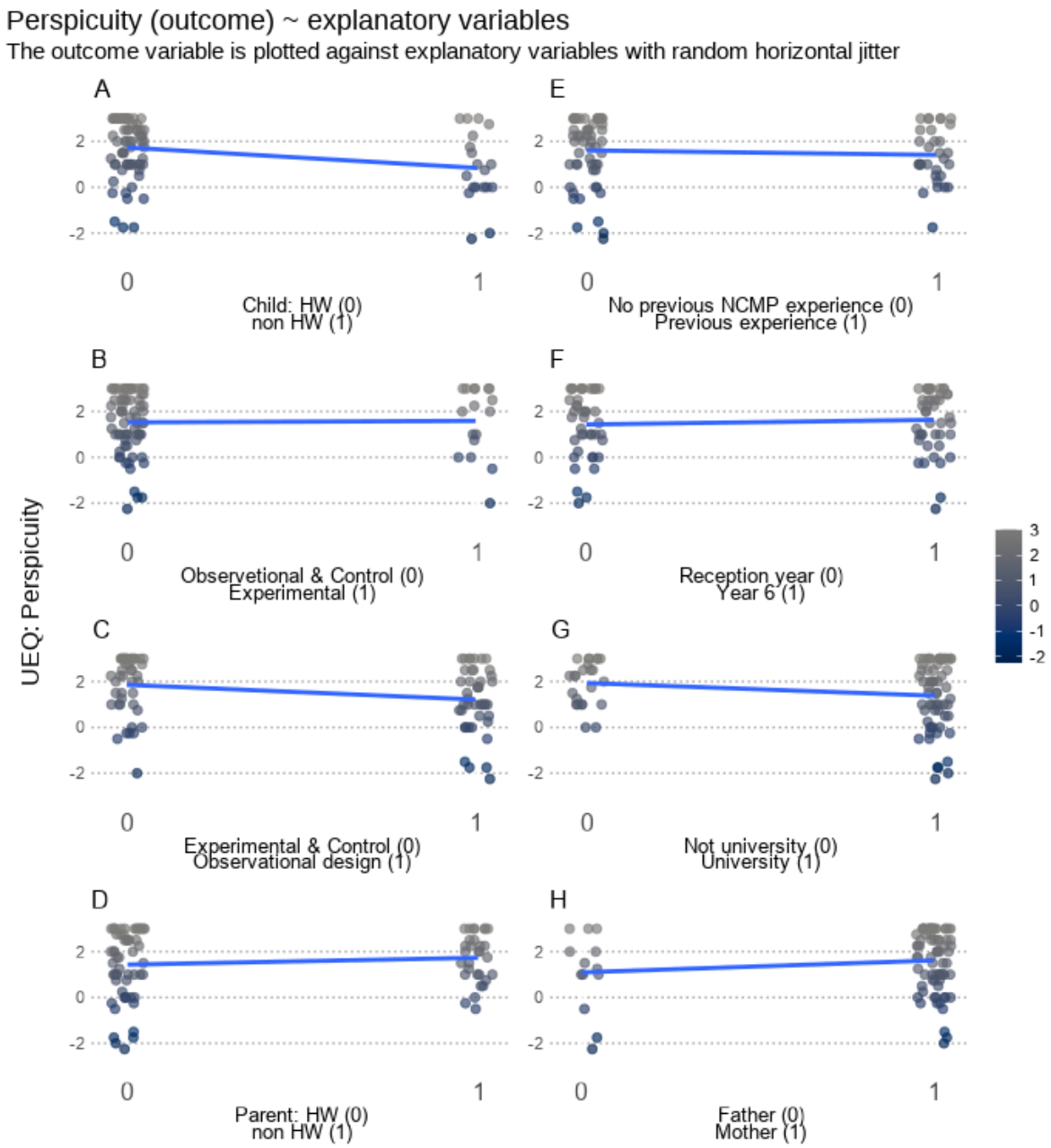


Figure 100: Perspicuity and Other Explanatory Variables

Once again, seven models were fitted and assessed before deciding on the best model (Tables 39, 40, 41). Similarly to the previous outcome variables, the only significant explanatory variables were the Weight Category and Design version.

Table 39: Models Comparison – Perspicuity

Coefficients	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
(Intercept)	1.74	2.16	2.09	2.15	1.98	2.18	1.83
SE	0.16	0.26	0.28	0.3	0.43	0.46	0.55
Pr(>|z|)	0	0	0	0	0	0	0
Child WeightCatLetter non HW	-0.89	-0.81	-0.79	-0.82	-0.87	-0.9	-0.92
SE	0.34	0.34	0.34	0.35	0.36	0.36	0.36
Pr(>|z|)	0.01	0.02	0.02	0.02	0.02	0.01	0.01
Design VersionExperimental	*	-0.38	-0.41	-0.42	-0.23	-0.12	-0.15
SE	*	0.41	0.41	0.41	0.53	0.54	0.54
Pr(>|z|)	*	0.34	0.32	0.31	0.67	0.83	0.79
Design VersionObservational	*	-0.74	-0.73	-0.71	-0.61	-0.5	-0.51
SE	*	0.32	0.33	0.33	0.37	0.38	0.38
Pr(>|z|)	*	0.02	0.02	0.03	0.1	0.19	0.18
Parent Weight Stat non HW	*	*	0.2	0.2	0.2	0.16	0.1
SE	*	*	0.3	0.3	0.3	0.3	0.31
Pr(>|z|)	*	*	0.5	0.51	0.52	0.59	0.75
Parent Other Children Yes	*	*	*	-0.19	-0.22	-0.16	-0.21
SE	*	*	*	0.3	0.31	0.31	0.31
Pr(>|z|)	*	*	*	0.54	0.47	0.6	0.51
Child Age Year 6 (aged 10 - 11)	*	*	*	*	0.22	0.23	0.17
SE	*	*	*	*	0.38	0.37	0.38
Pr(>|z|)	*	*	*	*	0.56	0.54	0.66
Parent Qualification University	*	*	*	*	*	-0.4	-0.35
SE	*	*	*	*	*	0.33	0.34
Pr(>|z|)	*	*	*	*	*	0.24	0.29
Parent Role Mother	*	*	*	*	*	*	0.48
SE	*	*	*	*	*	*	0.41
Pr(>|z|)	*	*	*	*	*	*	0.24

Table 40: Models Comparison – Perspicuity

Model	R. Squared	Adj.R. Squared	Sigma	Statistic	P.Value	Df	Loglik	AIC	BIC	Deviance	Df. Residual
1	0.07	0.06	1.32	6.73	0.01	2	-145.16	296.31	303.68	147.26	84
2	0.13	0.10	1.30	4.08	0.01	4	-142.49	294.97	307.24	138.39	82
3	0.13	0.09	1.30	3.16	0.02	5	-142.24	296.48	311.21	137.61	81
4	0.14	0.09	1.31	2.58	0.03	6	-142.04	298.07	315.25	136.95	80
5	0.14	0.08	1.31	2.19	0.05	7	-141.85	299.70	319.34	136.37	79
6	0.16	0.08	1.31	2.09	0.05	8	-141.08	300.17	322.26	133.95	78
7	0.17	0.09	1.31	2.01	0.06	9	-140.33	300.66	325.20	131.62	77

In the case of perspicuity, the first model made the most sense as the difference between models 1 and 2 was not large, and I prioritised the most parsimonious solution. This was concluded because Table 41 did not show the second model to significantly improve the first model, and Figure 101 comparing AIC and BIC suggested that the first model might be performing better.

Table 41: Models Comparison – Perspicuity

Model	Res.Df	Rss	Df	Sumsq	P.Value
1	84	147.26	*	*	*
2	82	138.39	2	8.87	0.07
3	81	137.61	1	0.78	0.5
4	80	136.95	1	0.66	0.54
5	79	136.37	1	0.58	0.56
6	78	133.95	1	2.42	0.23
7	77	131.62	1	2.33	0.24

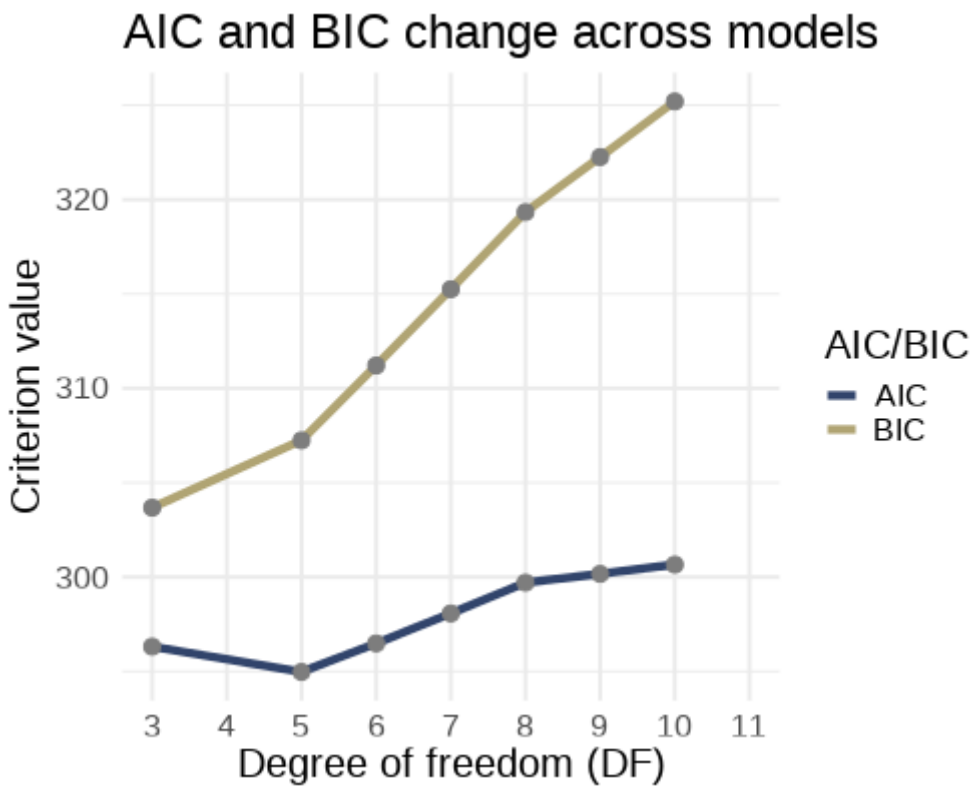


Figure 101: AIC/BIC of Perspicuity Models

Further diagnostics regarding the residual distribution, normality, and outlier assessments were carried out on the selected model 1, which included only the weight category of the letter.

The residuals were equally distributed in the model, although the QQ Plot suggested some deviance from normality on its tails. As with previous models, several cases that could be candidates for outliers were identified in the QQ Plot (Figure 102).

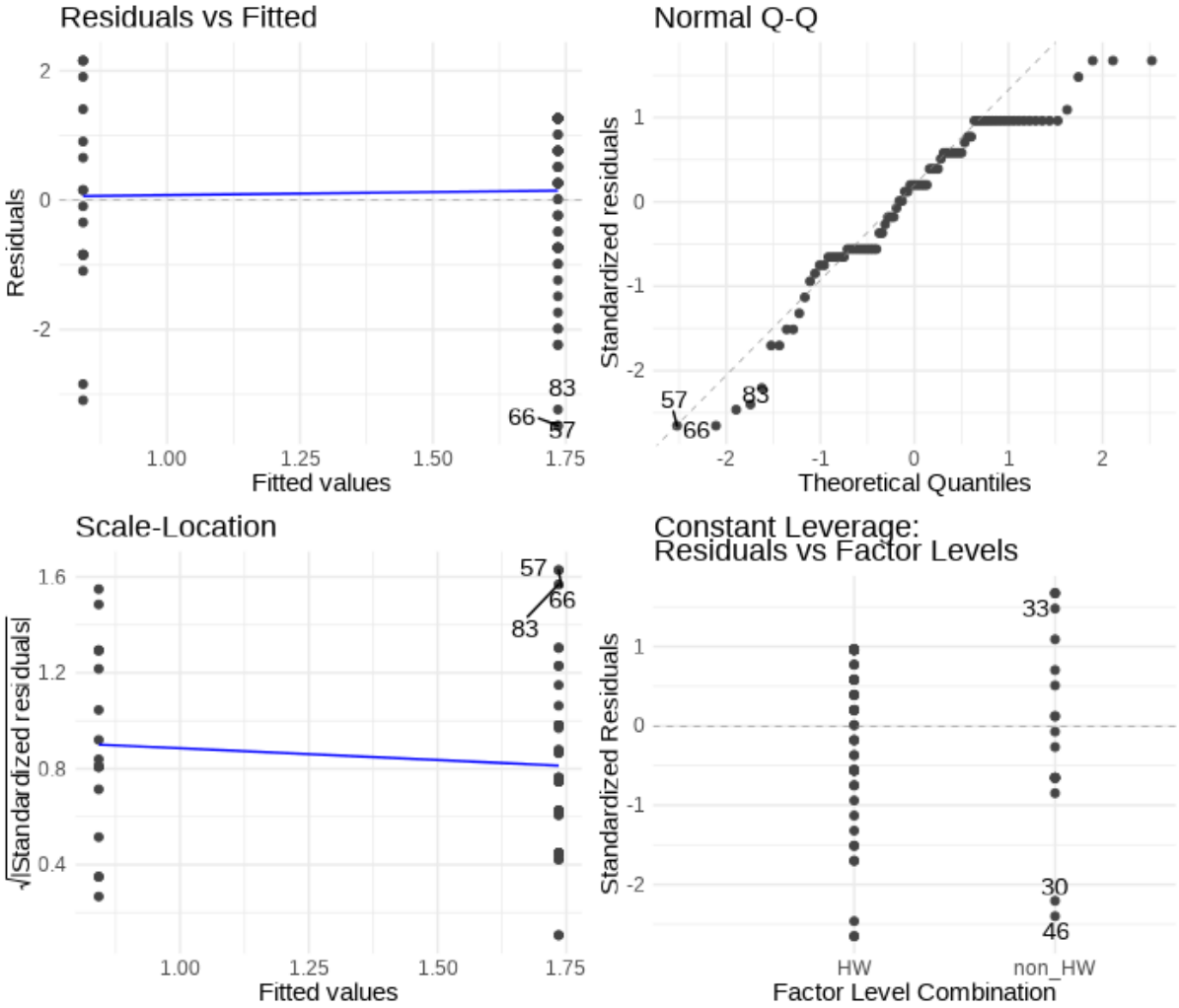


Figure 102: Diagnostic of Perspicuity Models (1)

The outlier plot (Figure 103) suggested that cases 57 and 66 could be potential outliers among some other cases. Upon closer examination of the impact of the cases on the coefficients, I removed cases 57 and 66 to see if they impacted coefficients; however, any changes were negligible; therefore, no cases were removed as outliers in this model.

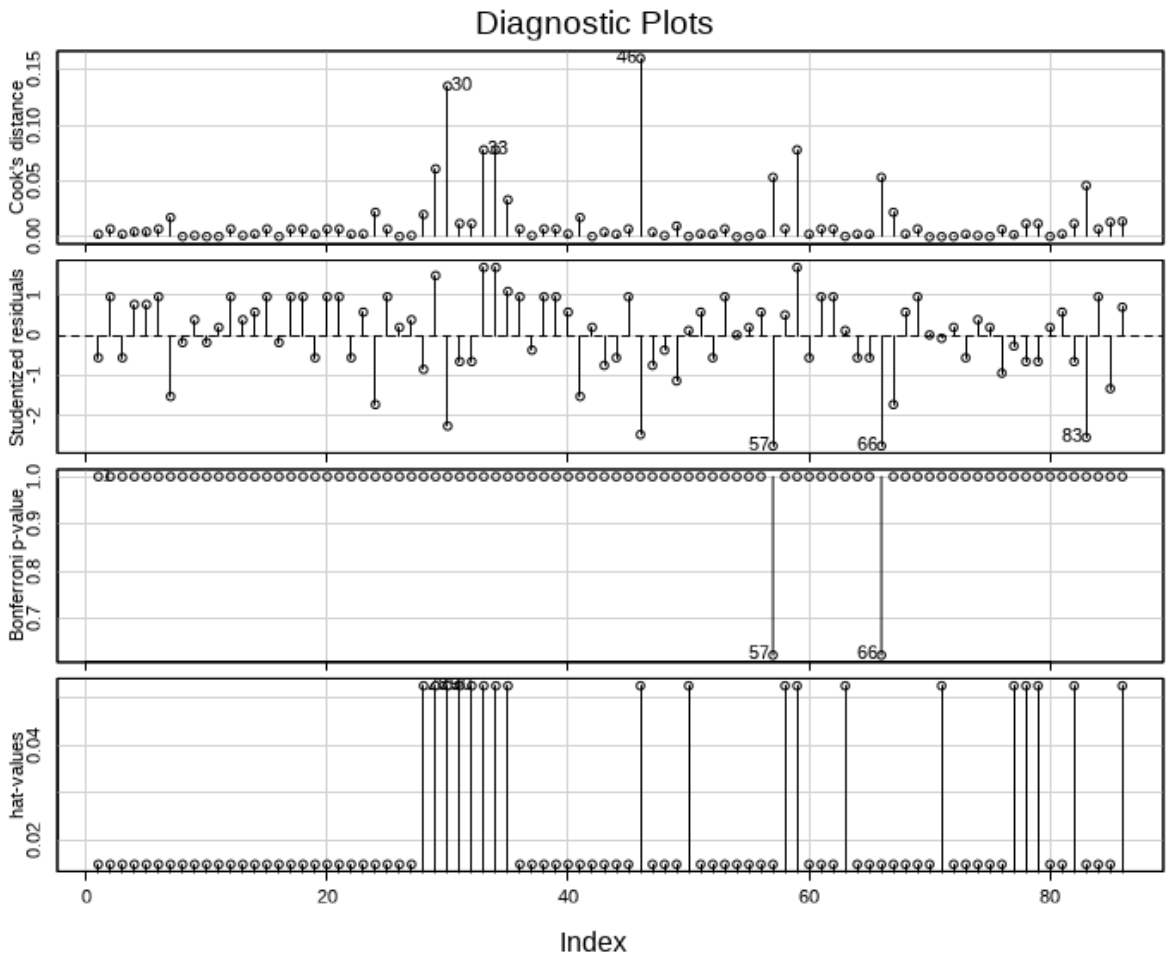


Figure 103: Diagnostic of Perspicuity Models (2)

The following tables show the regression estimates and diagnostics of the final model for Perspicuity.

Table 42: Final Model Estimates for Perspicuity

Term	Estimate	Std. Error	Statistic	P.Value	Conf.Low	Conf. High
(Intercept)	1.74	0.16	10.73	0.00	1.41	2.06
Child WeightCatLetter non HW	-0.89	0.34	-2.59	0.01	-1.58	-0.21

Table 43: Final Model Diagnostics for Perspicuity

R. Squared	Adj.R. Squared	Sigma	Statistic	P.Value	Df	Loglik	AIC	BIC	Deviance	Df. Residual
0.07	0.06	1.32	6.73	0.01	2	-145.16	296.31	303.68	147.26	84

3.7.6 Stimulation

The visualisation in Figure 104 below shows associations across the weight category of child and design, which occurred in the previous models, and there was also a weak association with the gender of the carer and parent's weight. However, the other associations were relatively weak except for the child's weight.

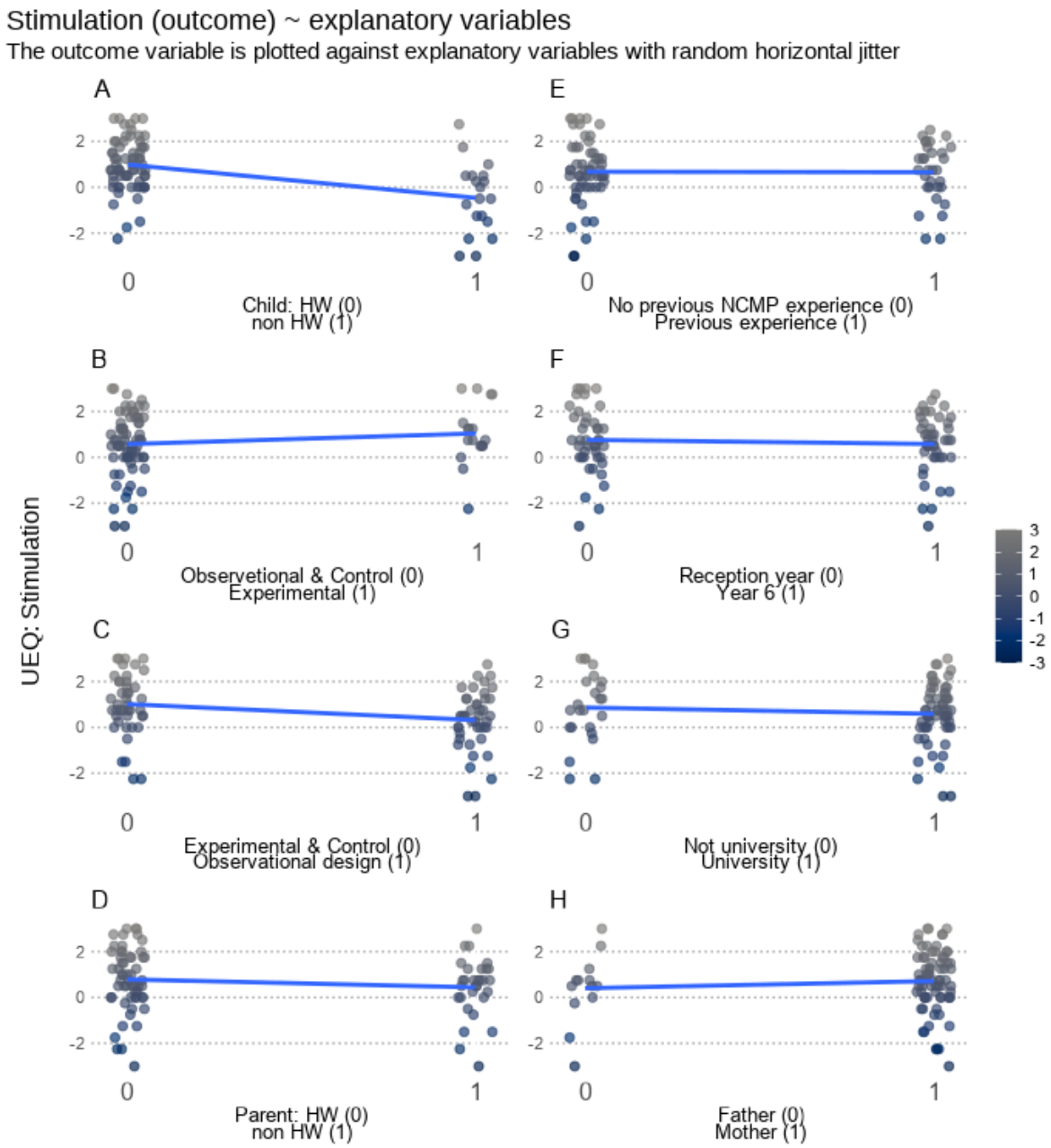


Figure 104: Stimulation and Other Explanatory Variables

From the seven models fitted below (Table 44), the variables that indicated a statistically significant association with reasonable SE were the child's weight result and the parent's weight status. Other variables were not statistically significant across any of the models.

Table 44: Models Comparison – Stimulation

Coefficients	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
(Intercept)	0.99	1.21	1.42	1.44	1.42	1.56	1.15
SE	0.15	0.24	0.25	0.27	0.38	0.41	0.49
Pr(>|z|)	0	0	0	0	0	0	0.02
Child WeightCatLetter non HW	-1.45	-1.4	-1.46	-1.47	-1.47	-1.49	-1.53
SE	0.32	0.31	0.31	0.31	0.32	0.32	0.32
Pr(>|z|)	0	0	0	0	0	0	0
Design VersionExperimental	*	0.16	0.23	0.23	0.25	0.33	0.3
SE	*	0.37	0.37	0.37	0.48	0.49	0.48
Pr(>|z|)	*	0.67	0.53	0.54	0.6	0.5	0.54
Design VersionObservational	*	-0.54	-0.56	-0.55	-0.54	-0.46	-0.47
SE	*	0.3	0.29	0.3	0.33	0.34	0.34
Pr(>|z|)	*	0.07	0.06	0.07	0.11	0.18	0.17
Parent Weight Stat non HW	*	*	-0.55	-0.55	-0.55	-0.58	-0.65
SE	*	*	0.27	0.27	0.27	0.27	0.28
Pr(>|z|)	*	*	0.04	0.04	0.04	0.03	0.02
Parent Other Children Yes	*	*	*	-0.06	-0.07	-0.02	-0.08
SE	*	*	*	0.27	0.28	0.28	0.28
Pr(>|z|)	*	*	*	0.82	0.81	0.94	0.79
Child Age Year 6 (aged 10 - 11)	*	*	*	*	0.03	0.03	-0.04
SE	*	*	*	*	0.34	0.34	0.34
Pr(>|z|)	*	*	*	*	0.94	0.92	0.91
Parent Qualification University	*	*	*	*	*	-0.29	-0.23
SE	*	*	*	*	*	0.3	0.3
Pr(>|z|)	*	*	*	*	*	0.35	0.44
Parent Role Mother	*	*	*	*	*	*	0.56
SE	*	*	*	*	*	*	0.37
Pr(>|z|)	*	*	*	*	*	*	0.13

Further evaluation of the models (Tables 45 and 46) showed that model 3 was performing the best among all of the other models with 22% explained variance and lower BIC and AIC values compared to the other models. The model was also statistically significantly different than model 1 or 2. Visualisation of the BIC and AIC is provided in Figure 105.

Table 45: Models Comparison – Stimulation

Model	R. Squared	Adj.R. Squared	Sigma	Statistic	P.Value	Df	Loglik	AIC	BIC	Deviance	Df. Residual
1	0.20	0.19	1.22	20.88	0	2	-138.14	282.28	289.64	125.09	84
2	0.25	0.22	1.20	9.11	0	4	-135.31	280.62	292.89	117.13	82
3	0.29	0.25	1.17	8.15	0	5	-133.13	278.27	293.00	111.34	81
4	0.29	0.24	1.18	6.46	0	6	-133.11	280.21	297.39	111.27	80
5	0.29	0.23	1.19	5.32	0	7	-133.10	282.21	301.84	111.26	79
6	0.30	0.23	1.19	4.68	0	8	-132.61	283.23	305.32	110.01	78
7	0.32	0.24	1.18	4.44	0	9	-131.37	282.74	307.28	106.87	77

Table 46: Models Comparison – Stimulation

Model	Res.Df	Rss	Df	Sumsq	P.Value
1	84	125.09	*	*	*
2	82	117.13	2	7.96	0.06
3	81	111.34	1	5.78	0.04
4	80	111.27	1	0.07	0.82
5	79	111.26	1	0.01	0.94
6	78	110.01	1	1.26	0.34
7	77	106.87	1	3.14	0.13

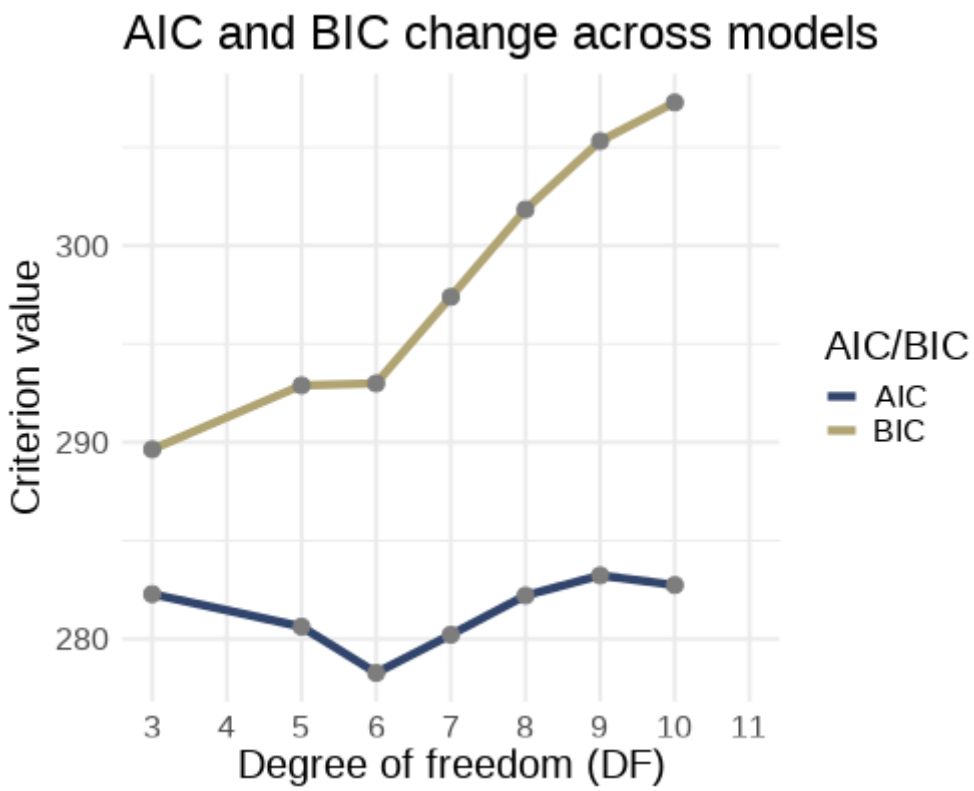


Figure 105: AIC/BIC of Stimulation Models

Model 3 seemed to perform reasonably well, and parent weight could be an important predictor; however, the letter design variable was not particularly relevant. It was not statistically significant and had high standard errors. Therefore, the final model removed this variable and included only the weight category of child and parent.

The diagnostics ran on the final model indicated that the residuals were normally distributed (Figure 106), but several potential outliers were identified (Figure 107). Upon closer examination, the complete data were retained, and none of the cases were removed as none seemed to influence coefficients.

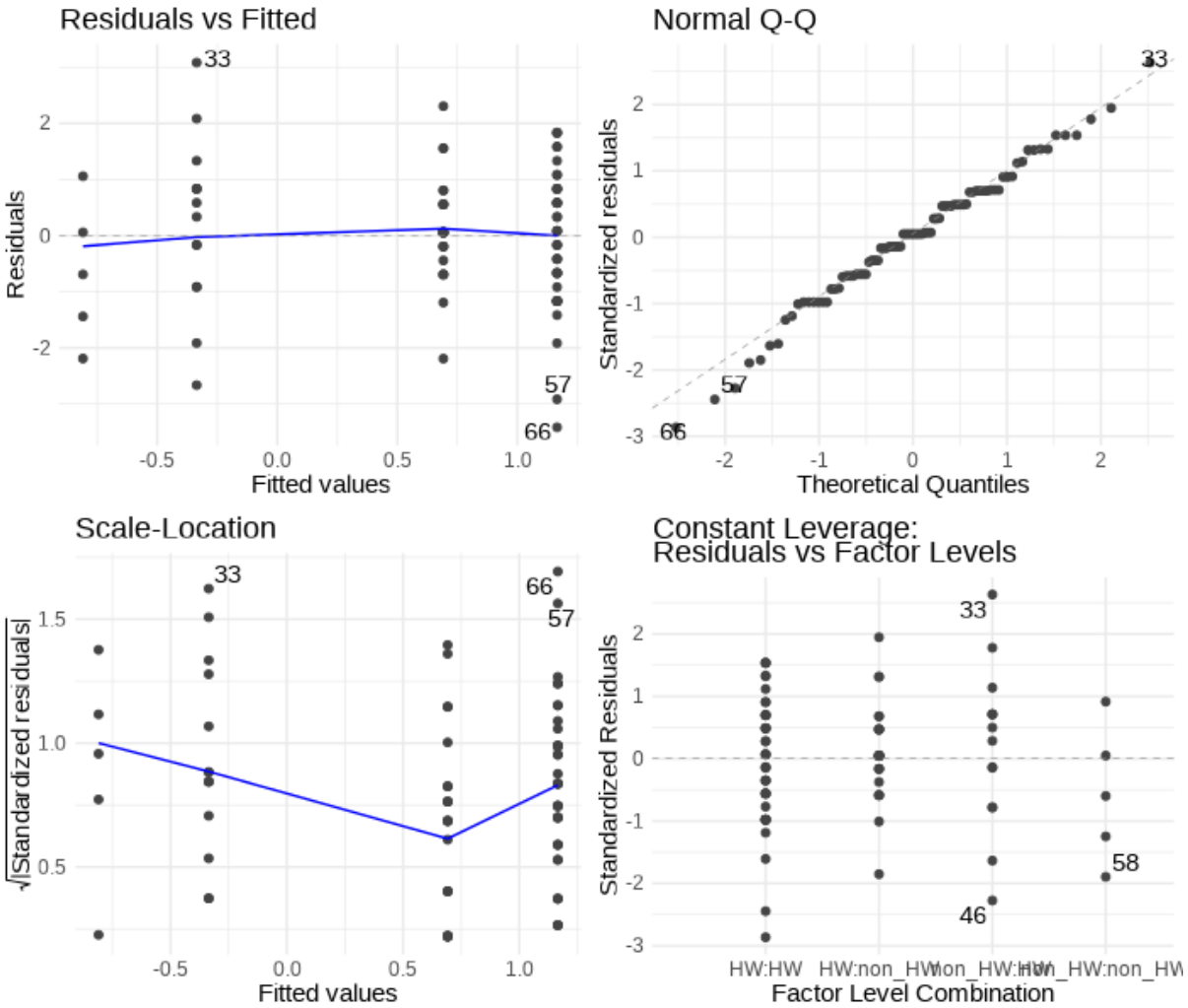


Figure 106: Diagnostic of Stimulation Models (1)

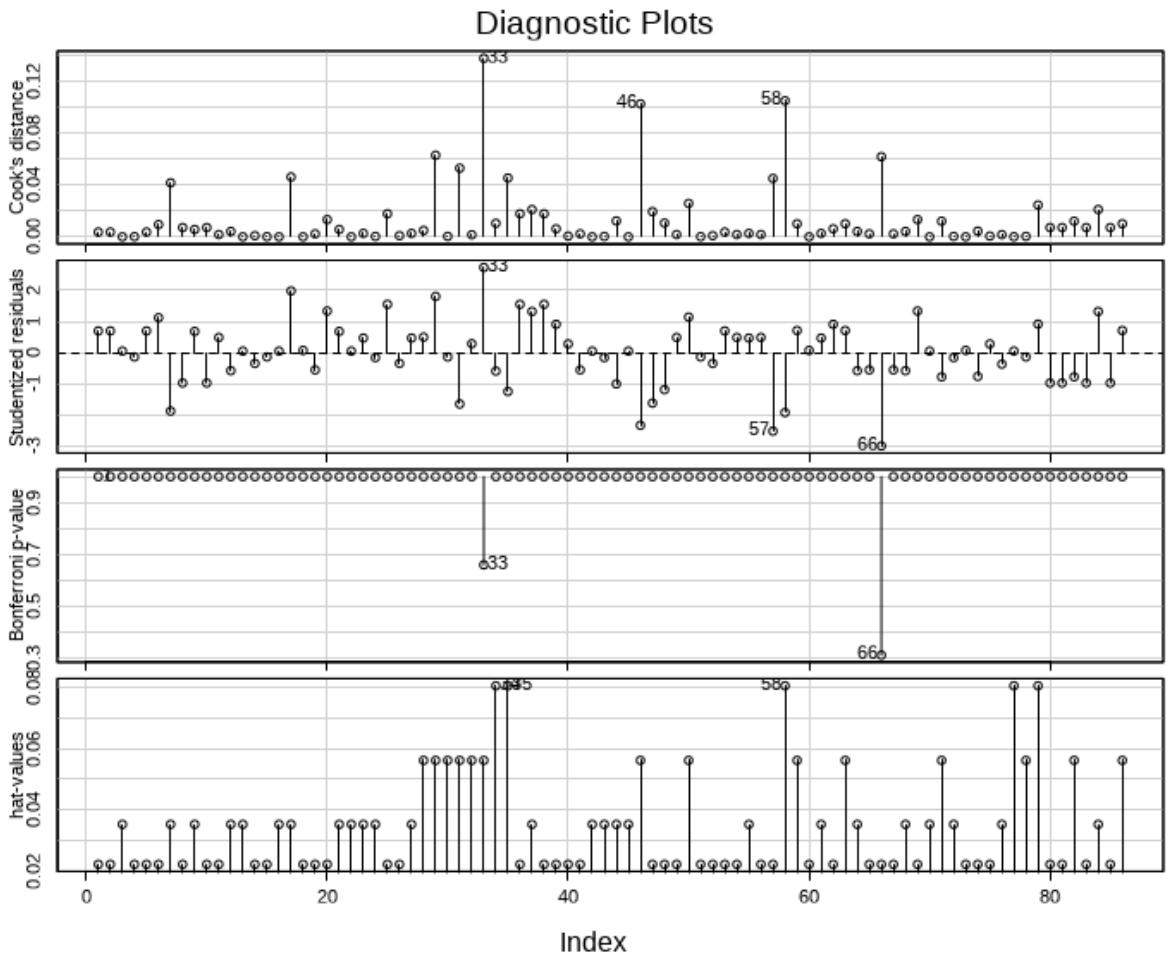


Figure 107: Diagnostic of Stimulation Models (2)

The following Tables 47 and 48 show the regression estimates and diagnostics of the final model for Stimulation.

Table 47: Final Model Estimates for Stimulation

Term	Estimate	Std. Error	Statistic	P.Value	Conf.Low	Conf. High
(Intercept)	1.17	0.18	6.50	0.00	0.81	1.52
Child WeightCatLetter non HW	-1.50	0.31	-4.77	0.00	-2.13	-0.88
Parent Weight Stat non HW	-0.47	0.27	-1.73	0.09	-1.02	0.07

Table 48: Final Model Diagnostics for Stimulation

R. Squared	Adj.R. Squared	Sigma	Statistic	P.Value	Df	Loglik	AIC	BIC	Deviance	Df. Residual
0.23	0.21	1.21	12.18	0	3	-136.62	281.24	291.06	120.74	83

3.8 Study 2 – Findings Regarding the Interaction with the Letter

The following findings present additional results that were excluded from the main text. In addition, further information such as diagnostic tests carried out or outlier management are provided below.

3.8.1 Contacted service model

Please note that the apparent variability across the points was created using random jitter – here and in the following sections. This is a common practice to resolve points overlap to make them randomly jitter and improve the visualisation.

Based on the visualisation below, no statistically significant effects were expected. A possible underlying reason was that the binary outcome variable included two vastly disproportionate groups as only a small proportion of parents contacted service.

The first outcome variable presented in this section is whether parents contacted any service (across all tiers) as a reaction to receiving the letter. The question was phrased as *Did you contact (e.g., sent an email, phone call, visited) any lifestyle service because of the letter?*

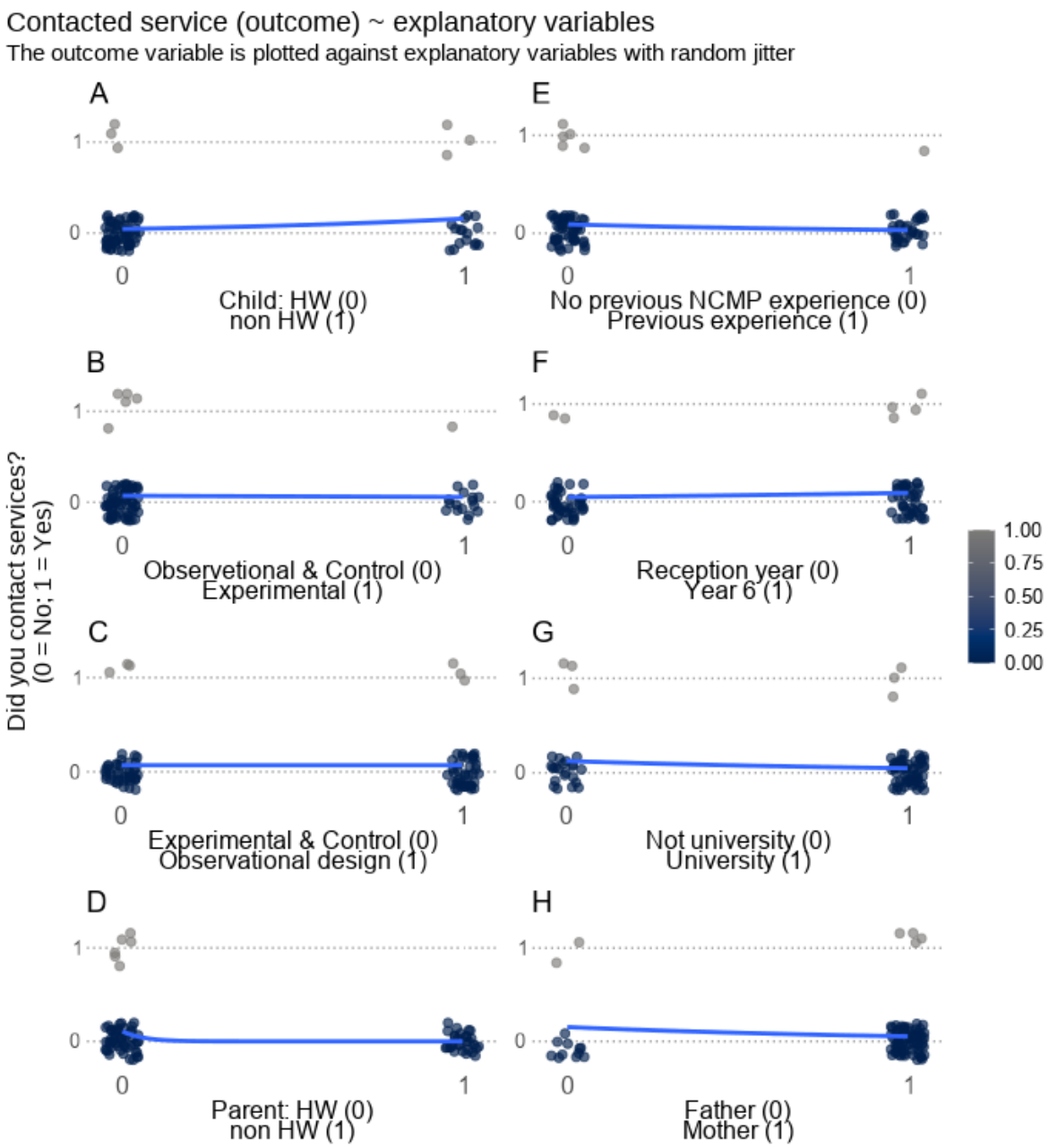


Figure 108: Contacted Service and Other Explanatory Variables

As with the user experience outcome variables, seven models were fitted to assess the impact of explanatory variables on the outcome variable (Figure 108). From Table 49 shown below, it is clear that no explanatory variables had a $p < 0.05$, and most had large SE values (above half of the coefficient) in comparison to their coefficients. None of the coefficients were interpretable; furthermore, due to the low sample size, the SE of parent weight seemed inflated since model 3.

Table 49: Models Comparison – Contacted Services

Coefficients	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
(Intercept)	-3.06	-2.84	-2.27	-1.93	-2.35	-1.7	-0.89
SE	0.59	0.81	0.8	0.83	1.32	1.36	1.44
Pr(>|z|)	0	0	0	0.02	0.07	0.21	0.54
Child WeightCatLetter non HW	1.39	1.43	1.41	1.36	1.13	1.13	1.17
SE	0.86	0.88	0.94	0.96	1.08	1.14	1.21
Pr(>|z|)	0.11	0.1	0.13	0.16	0.29	0.32	0.33
Design VersionExperimental	*	-0.46	-0.63	-0.73	-0.16	0.02	0.67
SE	*	1.3	1.4	1.41	1.94	1.94	2.03
Pr(>|z|)	*	0.72	0.65	0.6	0.93	0.99	0.74
Design VersionObservational	*	-0.31	-0.47	-0.46	-0.3	-0.18	-0.36
SE	*	0.98	1.02	1.05	1.12	1.16	1.23
Pr(>|z|)	*	0.76	0.64	0.66	0.79	0.88	0.77
Parent Weight Stat non HW	*	*	-17.34	-18.4	-18.38	-18.55	-18.36
SE	*	*	1900.23	3071.56	3090.4	3016.12	2960.81
Pr(>|z|)	*	*	0.99	1	1	1	1
Parent Other Children Yes	*	*	*	-1.13	-1.17	-1.06	-0.9
SE	*	*	*	1.15	1.16	1.17	1.22
Pr(>|z|)	*	*	*	0.33	0.31	0.36	0.46
Child Age Year 6 (aged 10 - 11)	*	*	*	*	0.57	0.47	1.16
SE	*	*	*	*	1.33	1.34	1.57
Pr(>|z|)	*	*	*	*	0.67	0.73	0.46
Parent Qualification University	*	*	*	*	*	-1.11	-1.41
SE	*	*	*	*	*	0.94	1.01
Pr(>|z|)	*	*	*	*	*	0.24	0.16
Parent Role Mother	*	*	*	*	*	*	-1.56
SE	*	*	*	*	*	*	1.23
Pr(>|z|)	*	*	*	*	*	*	0.21

Further model comparisons (Table 50) shows odds ratios or the exponentials of the coefficient estimates. As indicated earlier, the findings are null, and further interpretation is illustrative.

Table 50: Models Comparison – Contacted Services

Coefficients	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
(Intercept) [OR]	0.05	0.06	0.1	0.14	0.1	0.18	0.41
Child WeightCatLetter non HW [OR]	4	4.18	4.09	3.88	3.1	3.11	3.22
Design VersionExperimental [OR]	*	0.63	0.54	0.48	0.85	1.02	1.96
Design VersionObservational [OR]	*	0.74	0.62	0.63	0.74	0.84	0.7
Parent Weight Stat non-HW [OR]	*	*	0	0	0	0	0
Parent Other Children Yes [OR]	*	*	*	0.32	0.31	0.34	0.41
Child Age Year 6 (aged 10 - 11) [OR]	*	*	*	*	1.77	1.6	3.2
Parent Qualification University [OR]	*	*	*	*	*	0.33	0.25
Parent Role Mother [OR]	*	*	*	*	*	*	0.21

The models fitted also suffer from perfect separation. This was reported in R with the following error message: "*glm.fit: fitted probabilities numerically 0 or 1 occurred"* indicating that some predictor variables separated the outcome variable perfectly. For example, this error can be addressed with penalised regression. However, another more straightforward, valid approach prioritises and focuses on confidence intervals while using the standard GLM approach. This was done here and in any further models where this error has occurred.

Since none of the models has found any significant effects of any of the independent variables on contact with service, the models should be interpreted only with care.

Table 51 (below) presents various fit statistics. None of the models found any significant effect, and the decision as to which model to use in the additional analysis was primarily up to intuition, logical deduction, and theoretical assumptions. Judging the quality of models based on fit indices, the decision could come to either the first or the third model.

Table 51: Models Comparison – Contacted Services

Model	Null. Deviance	Df. Null	Loglik	AIC	BIC	Deviance	Df. Residual	McFadden's Pseudo R
1	43.52	85	-20.54	45.07	49.98	41.07	84	0.06
2	43.52	85	-20.46	48.92	58.74	40.92	82	0.06
3	43.52	85	-17.95	45.89	58.16	35.89	81	0.18
4	43.52	85	-17.38	46.75	61.48	34.75	80	0.20
5	43.52	85	-17.28	48.56	65.74	34.56	79	0.21
6	43.52	85	-16.59	49.19	68.82	33.19	78	0.24
7	43.52	85	-15.80	49.59	71.68	31.59	77	0.27

The model comparison methods are similar to linear models. Firstly, Table 52 shows all models with Chi-squared test on the difference of deviance. Model 3 seemed to be significantly different from the previous model.

Table 52: Models Comparison – Contacted Services

Model	Resid Df	Resid Dev	Df	Deviance	P.Value
1	84	41.07	*	*	*
2	82	40.92	2	0.15	0.93
3	81	35.89	1	5.03	0.02
4	80	34.75	1	1.14	0.29
5	79	34.56	1	0.19	0.66
6	78	33.19	1	1.37	0.24
7	77	31.59	1	1.59	0.21

The lowest AIC/BIC statistics were recorded for the first model, but the model had also high residual deviance, which suggested that it was only marginally improving a null model (Figure 109). Unfortunately, the choice was somewhat arbitrary, but the second-best model was model three (DF = 5) while considering the AIC/BIC.

Model 3 was also significantly better fit given the drop in deviance which was signified by the Pseudo R. Therefore, the third model will be utilised; however, the model has to be interpreted with extreme caution as variable parent's weight was causing perfect separation, and none of the variables was significant. Nevertheless, it was still interesting to at least illustrate the model with such variable and explore the association; however, the reader should consider OR and log ratios to be inflated and focus on confidence intervals.

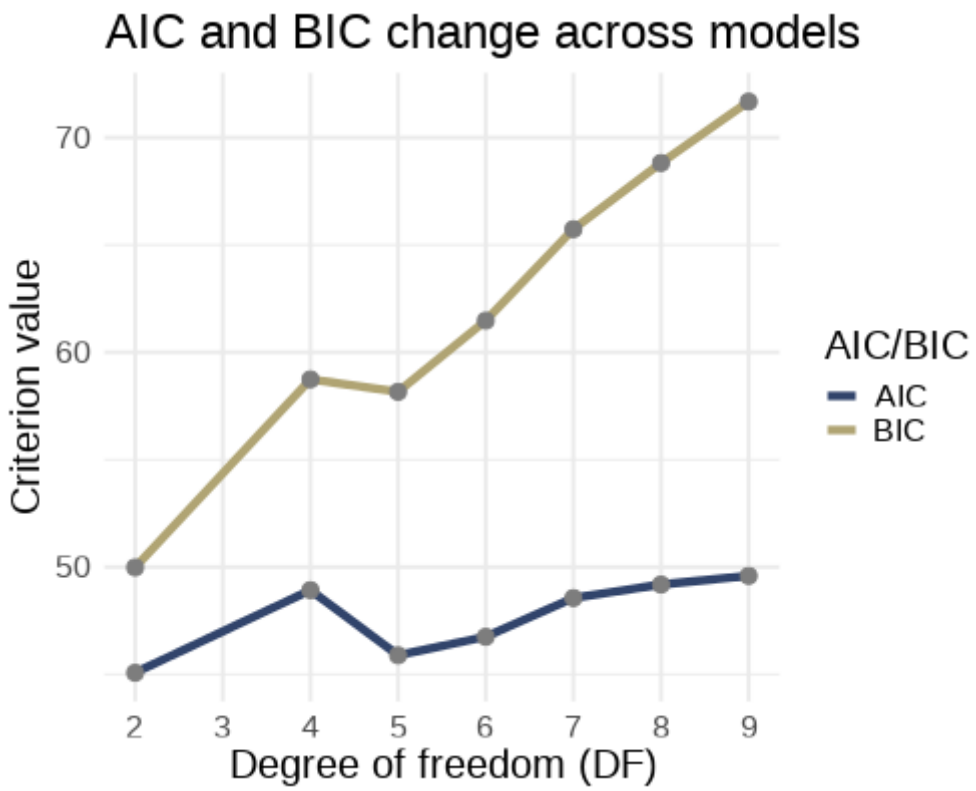


Figure 109: AIC/BIC of Contacted Service Models

The diagnostics did not reveal an unusual trend in residuals (binomial models tend to be represented differently from linear models). However, there were several candidate cases for outliers – 5, 11, 32, and 57 after inspecting relevant diagnostic plots (Figures 110 and 111). Fitting the updated model with removed cases (not presented) indicated that case 57 was the most influential on coefficients; therefore, the case was removed, and the final model was model 3 with case 57 removed. The model is presented below.

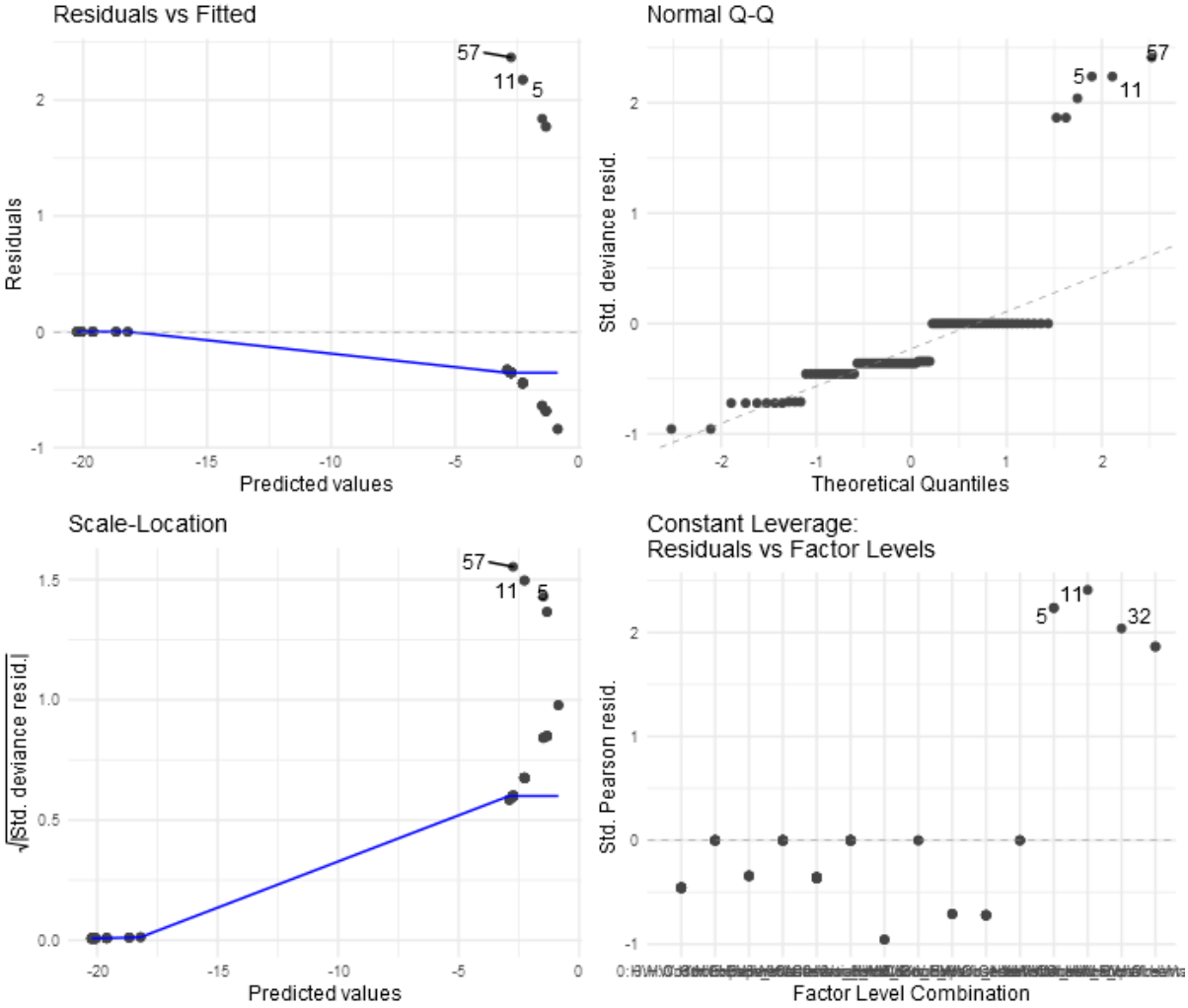


Figure 110: Diagnostic of Contacted Service Models (1)

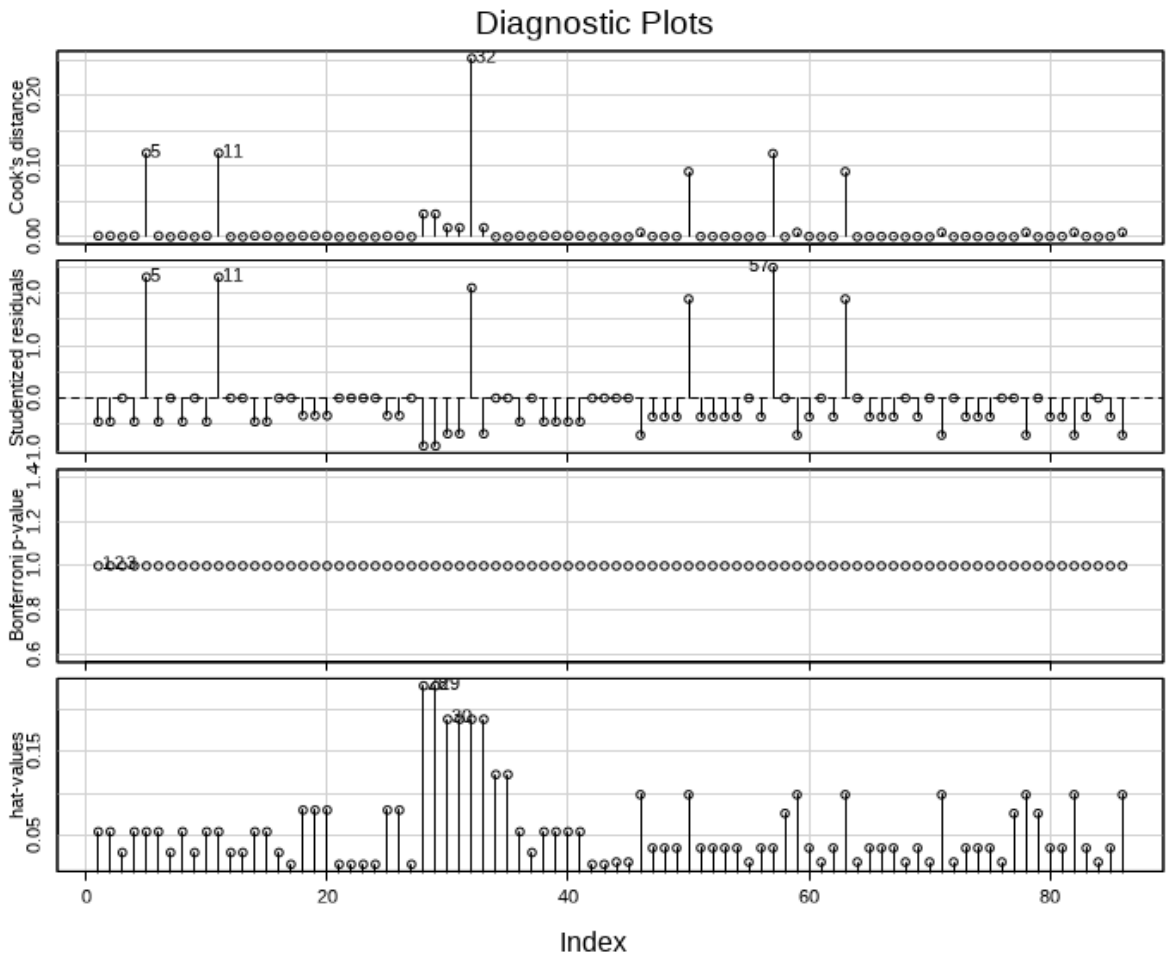


Figure 111: Diagnostic of Contacted Service Models (2)

Table 53 presents the summary of statistics for the final model. Unfortunately, none of the variables was significant, and the model also seemed to predict parent weight status poorly. Therefore, the model should be interpreted with care and should not be used for decision making.

The letter version seemed to be the most impactful variable. The interpretation would be that the parents who received the letter with either underweight, overweight, or very overweight version (with all other predictors held constant) had fitted log of odds of contacting a service 1.97 times higher than parents with healthy version, with a 95% confidence interval from -0.08 to 4.37. However, this was not significant and may not be used to draw any general conclusions.

Table 53: Final Model Estimates for Contacted Services

Term	Estimate	Std. Error	Statistic	P.Value	Conf.Low	Conf. High	Odds Ratio
(Intercept)	-2.42	0.85	-2.84	0.00	-4.51	-1.01	0.09
Child WeightCatLetter non HW	1.97	1.08	1.82	0.07	-0.08	4.37	7.17
Design VersionExperimental	-0.89	1.46	-0.61	0.54	-4.31	1.83	0.41
Design VersionObservational	-1.10	1.17	-0.94	0.35	-3.62	1.24	0.33
Parent Weight Stat non HW	-18.17	3028.93	-0.01	1.00	NA	230.88	0.00

Further Table 54 shows estimated probabilities of contacting service given the group. Probabilities are not fixed but depend on other variables at any given time. While they make sense as a simple, intuitive shortcut, they must be interpreted with care.

Table 54: Final Model Estimated Probabilities for Contacted Services

Group	Estimate [Prop.]	Std. Error	Conf.Low	Conf. High
Child WeightCatLetter HW	0.08	0.85	0.02	0.32
Child WeightCatLetter non HW	0.39	1.10	0.07	0.85
Design Version Control	0.08	0.85	0.02	0.32
Design Version Experimental	0.03	1.40	0.00	0.36
Design Version Observational	0.03	1.04	0.00	0.19
Parent Weight Stat HW	0.08	0.85	0.02	0.32
Parent Weight Stat non HW	0.00	3028.93	0.00	1.00

The final Table 55 shows the model fit indices.

Table 55: Final Model Diagnostics for Contacted Services

Null. Deviance	Df. Null	Loglik	AIC	BIC	Deviance	Df. Residual	McFadden's Pseudo R
38.03	84	-14.81	39.61	51.83	29.61	80	0.22

Finally, predicted values are shown in Figure 112. These correspond to Table 55 above. The points were jittered to show how many points exist on a given axis. The estimated predicted probabilities are black points surrounded by their corresponding confidence intervals. Overall, it was assumed that parents generally do not contact services considering the model here; however, these results may be beneficial for further studies but not guide the decision-making process due to low sample size, non-significance, and poor fit.

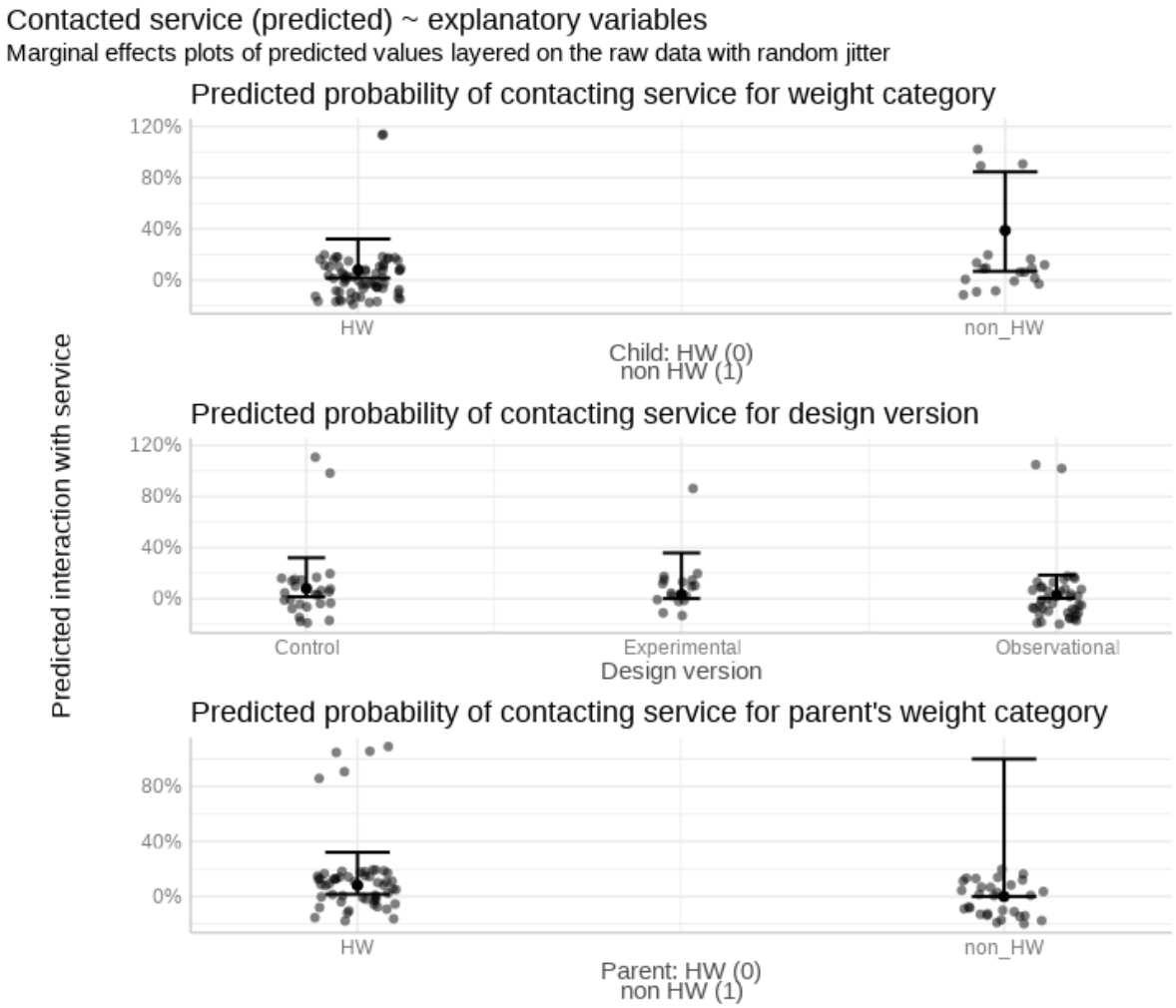


Figure 112: Final Model Predicted Values for Contacted Services

3.8.2 Contacted GP model

The second outcome variable presented in this section was whether parents contacted a GP or doctor as a reaction to receiving the letter. The question was phrased as *Did you contact (e.g., sent an email, phone call, visited) a GP/Doctor because of the letter?*

Similarly to the previous outcome variable, there was no observable effect across the explanatory variables, with some of the variables not being represented as they had no cases of the outcome variable – e.g., panel B Figure 113.

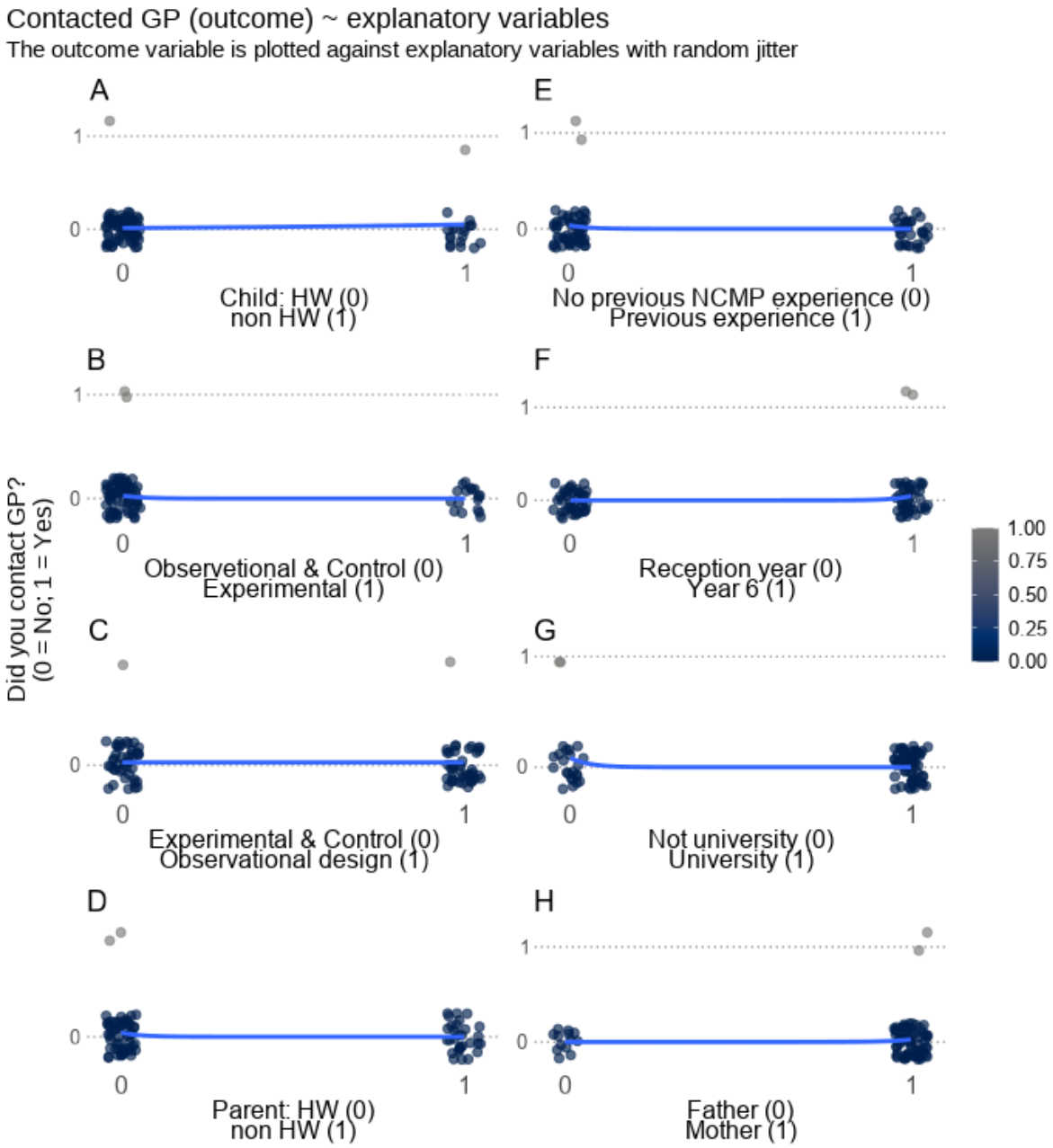


Figure 113: Contacted GP and Other Explanatory Variables

As presented in Table 56 below, the models did not fit or represent the relationship between explanatory and outcome variables very well. There were also many cases (due to low N) where the coefficients were inflated due to perfect separation. Furthermore, any model after the second model suffered from the inflated coefficients and high SE values that signify this. This is also illustrated in Tables 57 and 58.

Table 56: Models Comparison – Contacted GP

Coefficients	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
(Intercept)	-4.19	-3.6	-3.12	-2.56	-21.36	-21.06	-21.87
SE	1.01	1.18	1.17	1.14	8529.51	12835.21	19372.75
Pr(>|z|)	0	0	0.01	0.03	1	1	1
Child WeightCatLetter non HW	1.3	1.45	1.63	1.63	0.49	-0.41	-0.48
SE	1.44	1.47	1.54	1.7	1.99	9766.13	9848.4
Pr(>|z|)	0.37	0.33	0.29	0.34	0.81	1	1
Design VersionExperimental	*	-17.47	-18.58	-19.79	-0.28	0.94	0.11
SE	*	4176.57	6211.5	9842.78	13312.32	19150.91	20006.5
Pr(>|z|)	*	1	1	1	1	1	1
Design VersionObservational	*	-0.73	-0.96	-1.07	-0.31	0.41	0.48
SE	*	1.47	1.54	1.69	1.99	9766.13	9848.4
Pr(>|z|)	*	0.62	0.53	0.53	0.88	1	1
Parent Weight Stat non HW	*	*	-18.15	-19.3	-19.06	-20.12	-20.11
SE	*	*	4857.58	7474.1	7345.23	11690.27	11732.44
Pr(>|z|)	*	*	1	1	1	1	1
Parent Other Children Yes	*	*	*	-19.18	-19.41	-20.11	-20.14
SE	*	*	*	7666.6	7576.86	11430.5	11546.59
Pr(>|z|)	*	*	*	1	1	1	1
Child Age Year 6 (aged 10 - 11)	*	*	*	*	19.35	20.37	19.53
SE	*	*	*	*	8529.51	12835.21	14179.05
Pr(>|z|)	*	*	*	*	1	1	1
Parent Qualification University	*	*	*	*	*	-20.64	-20.48
SE	*	*	*	*	*	8240.61	8388.63
Pr(>|z|)	*	*	*	*	*	1	1
Parent Role Mother	*	*	*	*	*	*	1.65
SE	*	*	*	*	*	*	21919.71
Pr(>|z|)	*	*	*	*	*	*	1

Table 57: Models Comparison – Contacted GP

Coefficients	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
(Intercept) [OR]	0.02	0.03	0.04	0.08	0	0	0
Child WeightCatLetter non HW [OR]	3.67	4.26	5.08	5.13	1.63	0.66	0.62
Design VersionExperimental [OR]	*	0	0	0	0.75	2.55	1.12
Design VersionObservational [OR]	*	0.48	0.38	0.34	0.73	1.51	1.61
Parent Weight Stat non-HW [OR]	*	*	0	0	0	0	0
Parent Other Children Yes [OR]	*	*	*	0	0	0	0
Child Age Year 6 (aged 10 - 11) [OR]	*	*	*	*	252724640.47	701430496.56	302111718.02
Parent Qualification University [OR]	*	*	*	*	*	0	0
Parent Role Mother [OR]	*	*	*	*	*	*	5.23

Table 58: Models Comparison – Contacted GP

Model	Null. Deviance	Df. Null	Loglik	AIC	BIC	Deviance	Df. Residual	McFadden's Pseudo R
1	19	85	-9.11	22.23	27.14	18.23	84	0.04
2	19	85	-8.53	25.07	34.88	17.07	82	0.10
3	19	85	-7.66	25.31	37.58	15.31	81	0.19
4	19	85	-6.69	25.37	40.10	13.37	80	0.30
5	19	85	-6.00	26.00	43.18	12.00	79	0.37
6	19	85	-3.82	23.64	43.27	7.64	78	0.60
7	19	85	-3.82	25.64	47.73	7.64	77	0.60

Comparison of the models as per Table 59 and their AIC and BIC as per Figure 114 was conducted but had little meaning given the models fail to represent the relationship well.

Table 59: Models Comparison – Contacted GP

Model	Resid Df	Resid Dev	Df	Deviance	P.Value
1	84	18.23	*	*	*
2	82	17.07	2	1.16	0.56
3	81	15.31	1	1.76	0.19
4	80	13.37	1	1.94	0.16
5	79	12	1	1.38	0.24
6	78	7.64	1	4.36	0.04
7	77	7.64	1	0	1

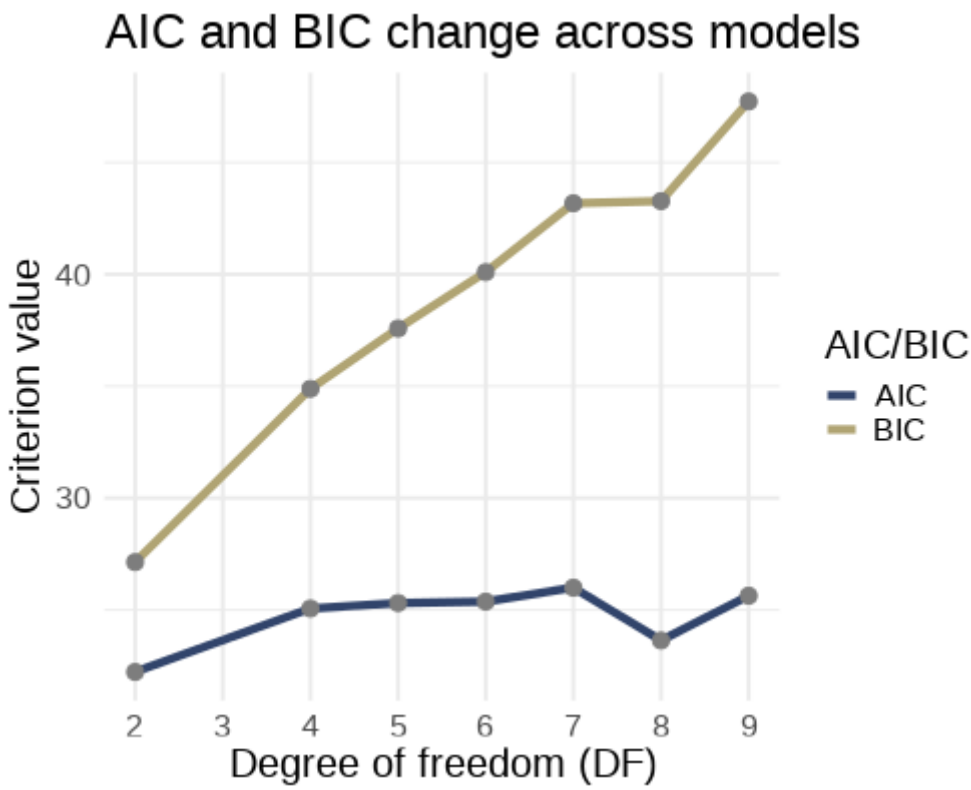


Figure 114: AIC/BIC of Contacted GP Models

The first model was selected because it did not suffer from the issue of perfect separation and did not seem to have inflated OR (or the least inflated). This can also be rationalised as the BIC and AIC of the model were the best, and other models (beside Model 6) did not seem to offer a significant change in deviance.

Diagnostic plots below (Figures 115 and 116), especially the first Figure 115, illustrated the poor fit of the model, unusual patterns QQ Plot, and outliers among the few collected responses. The outlier assessment indicated that three cases that were a candidate for outliers are 11, 28, and 86. However, the removal of cases would lead to substantial changes in SE (not reported) because the model would have no outcome variables. Therefore, no cases were removed, and the model was used as defined above.

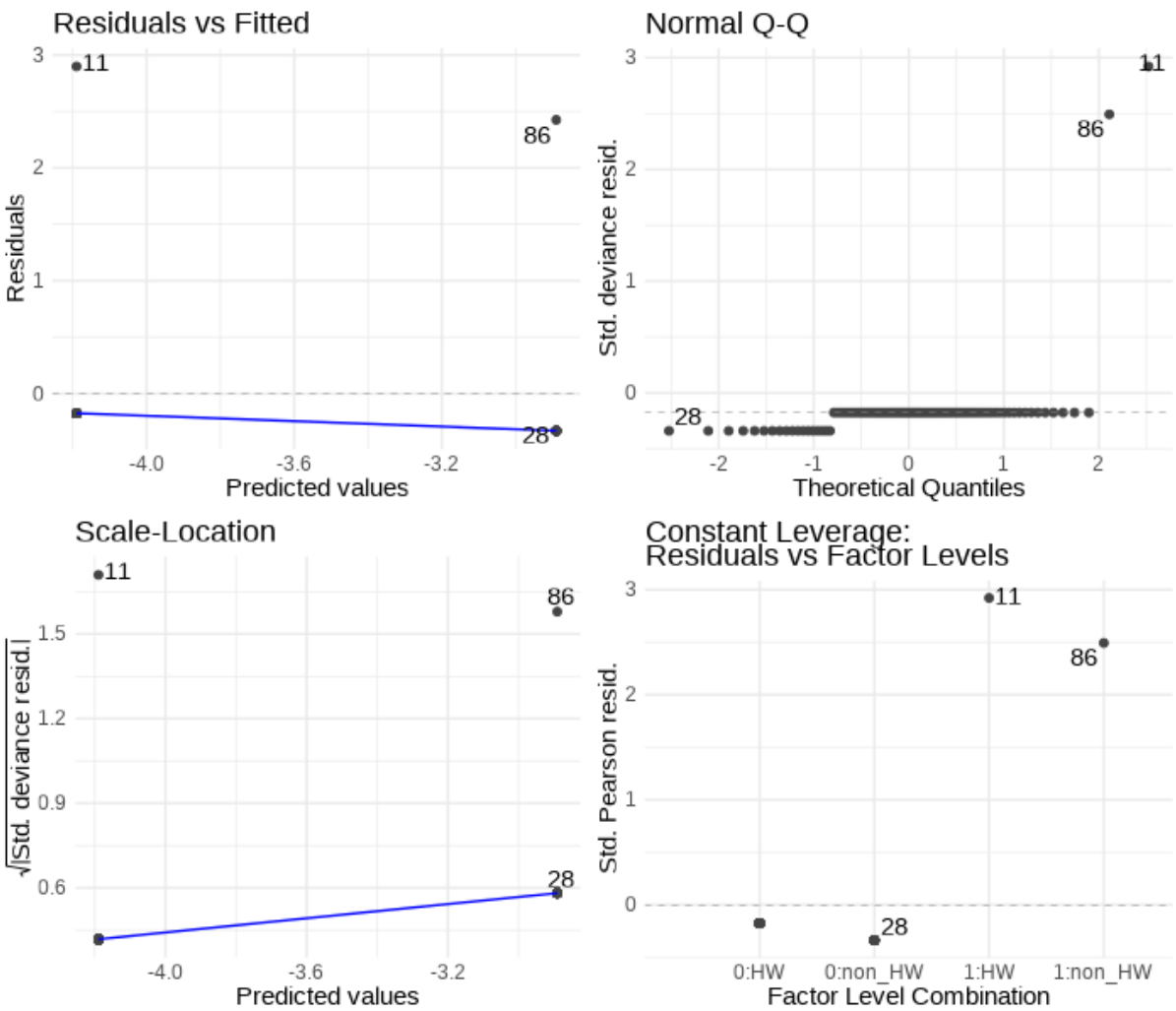


Figure 115: Diagnostic of Contacted GP Models (1)

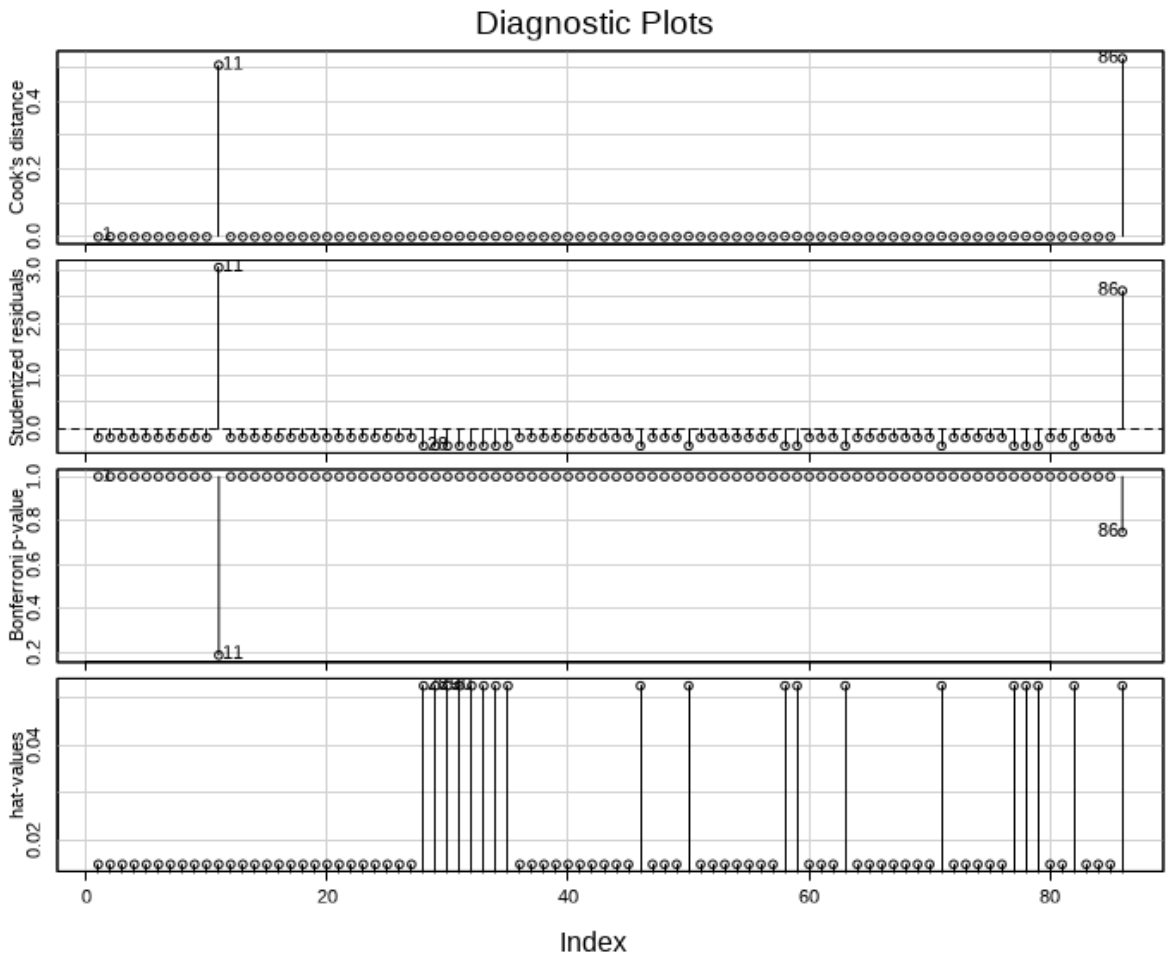


Figure 116: Diagnostic of Contacted GP Models (2)

The final model was represented in the following three Tables 60, 61, and 62, but it was clear it was impossible to observe any effect given the low sample size of parents who contacted GP. The interpretation would be only illustrative as with the previous outcome variable. The indication here was that the model fits poorly and should not be used. Therefore, no further interpretation was provided.

Table 60: Final Model Estimates for Contacted GP

Term	Estimate	Std. Error	Statistic	P.Value	Conf.Low	Conf. High	Odds Ratio
(Intercept)	-4.19	1.01	-4.16	0.00	-7.06	-2.68	0.02
Child WeightCatLetter non HW	1.30	1.44	0.90	0.37	-1.96	4.56	3.67

Table 61: Final Model Estimated Probabilities for Contacted GP

Group	Estimate [Prop.]	Std. Error	Conf.Low	Conf. High
Child WeightCatLetter HW	0.01	1.01	0.00	0.10
Child WeightCatLetter non HW	0.05	1.03	0.01	0.29

Table 62: Final Model Diagnostics for Contacted GP

Null. Deviance	Df. Null	Loglik	AIC	BIC	Deviance	Df. Residual	McFadden's Pseudo R
19	85	-9.11	22.23	27.14	18.23	84	0.04

Figure 117 provides a good illustration of what was happening in the model. The sample size makes the comparison difficult because the “Yes” level has only one case per level and the “No” many more. As with the previous models, the descriptive interpretation suggests that parents did not contact GP as a result of the letter.

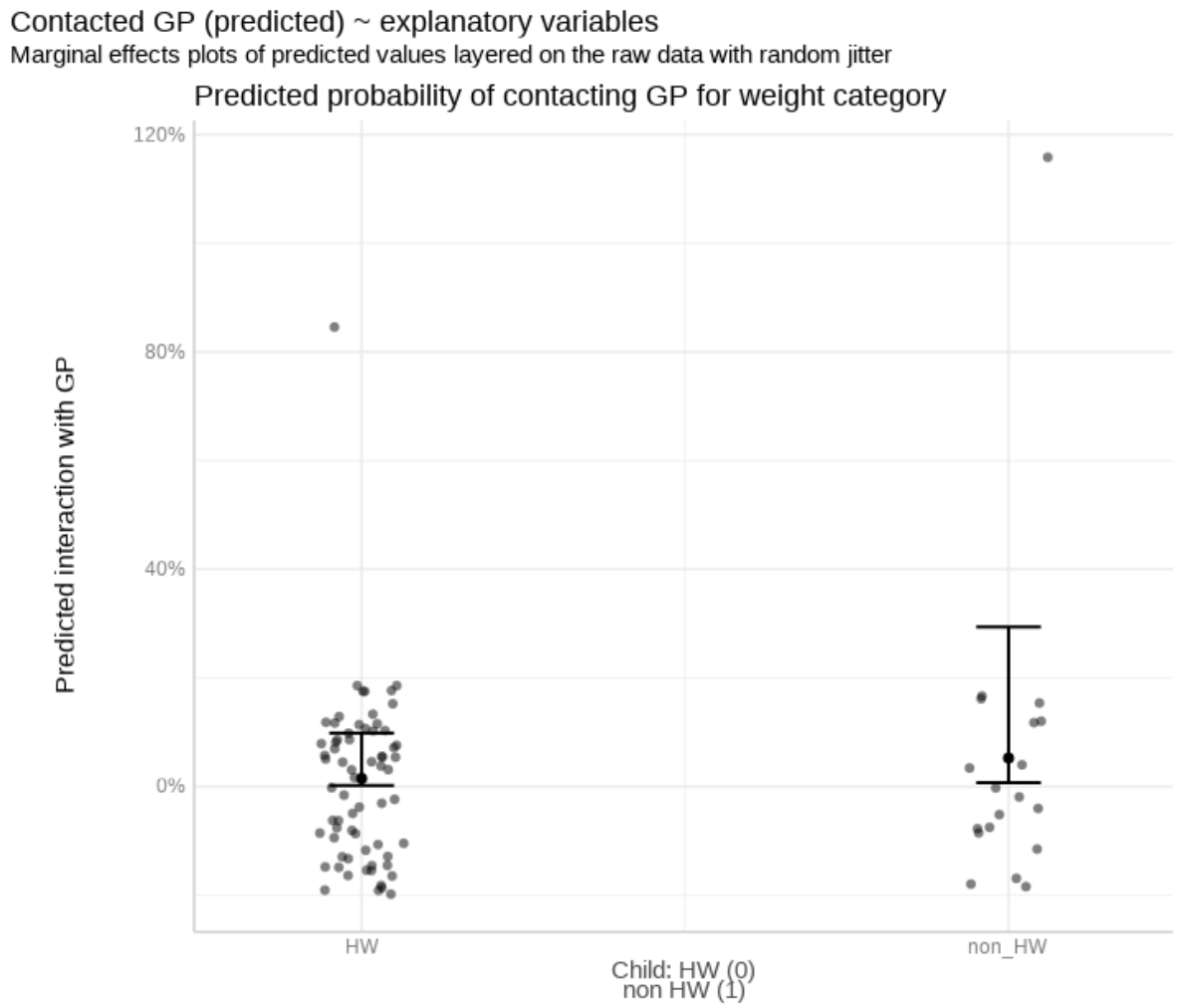


Figure 117: Final Model Predicted Values for Contacted GP

3.8.3 Contacted school nurse model

The third outcome variable presented in this section was whether parents contacted the school nurse as a reaction to receiving the letter. The question was phrased as *Did you contact (e.g., sent an email, phone call, visited) a School nurse or nursing team because of the letter?*

As opposed to the previous two models, more people chose to contact the school nurse. This suggested that the models should be easier to fit; however, the association may still not be possible to explore across all variables. The graphs where slight association manifested on the AB line were panels A, B, and E in Figure 118 below.

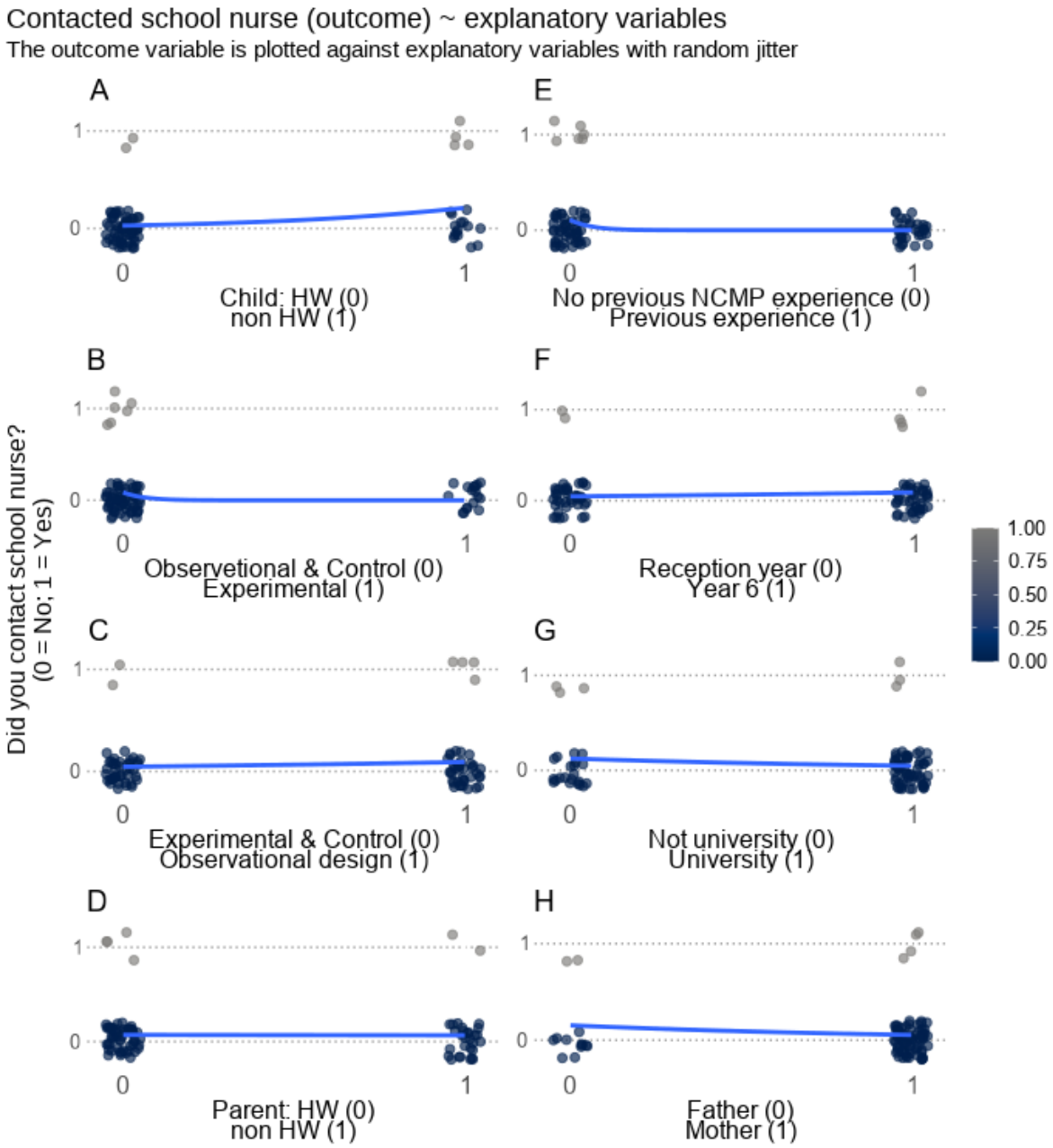


Figure 118: Contacted School Nurse and Other Explanatory Variables

From the seven models fitted in Table 63, model 1 looks reasonable given other models to have inflated SE. The SE of the first model was still almost half of the coefficient. As opposed to previous models, the important takeaway was that since there were more cases for “Yes, I contacted school nurse”, the predictor variable weight of the letter was significant across all models.

Similarly, to the previous two outcome variables, in this case, model 4 and onwards suffered from perfect separation. Table 64 also indicated the weight category of the letter was the most robust effect across all of the models.

The fit statistics in Table 65 suggested relatively poor fit and low explanatory value of the model given large deviance and low Pseudo R Squared.

Table 63: Models Comparison – Contacted School Nurse

Coefficients	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
(Intercept)	-3.48	-3.19	-3.2	-2.67	-2.27	-1.92	-1.16
SE	0.72	0.91	0.98	1.01	1.38	1.47	1.51
Pr(>|z|)	0	0	0	0.01	0.1	0.19	0.44
Child WeightCatLetter non HW	2.16	2.26	2.26	2.11	2.35	2.36	2.36
SE	0.91	0.94	0.94	0.99	1.2	1.25	1.3
Pr(>|z|)	0.02	0.02	0.02	0.03	0.05	0.06	0.07
Design VersionExperimental	*	-17.32	-17.33	-18.38	-18.91	-18.74	-18.15
SE	*	2412.22	2420.61	3850.37	3811.07	3813.85	3923.75
Pr(>|z|)	*	0.99	0.99	1	1	1	1
Design VersionObservational	*	-0.11	-0.11	0.04	-0.19	-0.1	-0.06
SE	*	0.97	0.98	1.04	1.2	1.21	1.22
Pr(>|z|)	*	0.91	0.91	0.97	0.87	0.93	0.96
Parent Weight Stat non HW	*	*	0.02	-0.09	-0.24	-0.33	0.27
SE	*	*	0.97	1.04	1.13	1.14	1.3
Pr(>|z|)	*	*	0.98	0.93	0.83	0.77	0.84
Parent Other Children Yes	*	*	*	-18.34	-18.31	-18.13	-17.74
SE	*	*	*	2939.35	2907.45	2905.98	2929.87
Pr(>|z|)	*	*	*	1	0.99	1	1
Child Age Year 6 (aged 10 - 11)	*	*	*	*	-0.5	-0.61	-0.25
SE	*	*	*	*	1.29	1.34	1.4
Pr(>|z|)	*	*	*	*	0.7	0.65	0.86
Parent Qualification University	*	*	*	*	*	-0.56	-0.78
SE	*	*	*	*	*	1.01	1.05
Pr(>|z|)	*	*	*	*	*	0.58	0.46
Parent Role Mother	*	*	*	*	*	*	-1.48
SE	*	*	*	*	*	*	1.34
Pr(>|z|)	*	*	*	*	*	*	0.27

Table 64: Models Comparison – Contacted School Nurse

Coefficients	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
(Intercept) [OR]	0.03	0.04	0.04	0.07	0.1	0.15	0.31
Child WeightCatLetter non HW [OR]	8.67	9.61	9.61	8.25	10.44	10.58	10.58
Design VersionExperimental [OR]	*	0	0	0	0	0	0
Design VersionObservational [OR]	*	0.89	0.9	1.04	0.83	0.9	0.94
Parent Weight Stat non-HW [OR]	*	*	1.02	0.91	0.78	0.72	1.31
Parent Other Children Yes [OR]	*	*	*	0	0	0	0
Child Age Year 6 (aged 10 - 11) [OR]	*	*	*	*	0.61	0.54	0.78
Parent Qualification University [OR]	*	*	*	*	*	0.57	0.46
Parent Role Mother [OR]	*	*	*	*	*	*	0.23

Table 65: Models Comparison – Contacted School Nurse

Model	Null. Deviance	Df. Null	Loglik	AIC	BIC	Deviance	Df. Residual	McFadden's Pseudo R
1	43.52	85	-18.77	41.54	46.45	37.54	84	0.14
2	43.52	85	-17.25	42.49	52.31	34.49	82	0.21
3	43.52	85	-17.25	44.49	56.76	34.49	81	0.21
4	43.52	85	-14.62	41.24	55.97	29.24	80	0.33
5	43.52	85	-14.54	43.09	60.27	29.09	79	0.33
6	43.52	85	-14.39	44.78	64.42	28.78	78	0.34
7	43.52	85	-13.75	45.51	67.60	27.51	77	0.37

Given the issues with model 4 and onwards, the conservative choice was made, and model 1 was selected as the final model. While having the best AIC and BIC, the fit statistics were still indicative of poor fir for this model (Figure 119).

Table 66: Models Comparison – Contacted School Nurse

Model	Resid Df	Resid Dev	Df	Deviance	P.Value
1	84	37.54	*	*	*
2	82	34.49	2	3.05	0.22
3	81	34.49	1	0	0.98
4	80	29.24	1	5.25	0.02
5	79	29.09	1	0.15	0.7
6	78	28.78	1	0.31	0.58
7	77	27.51	1	1.27	0.26

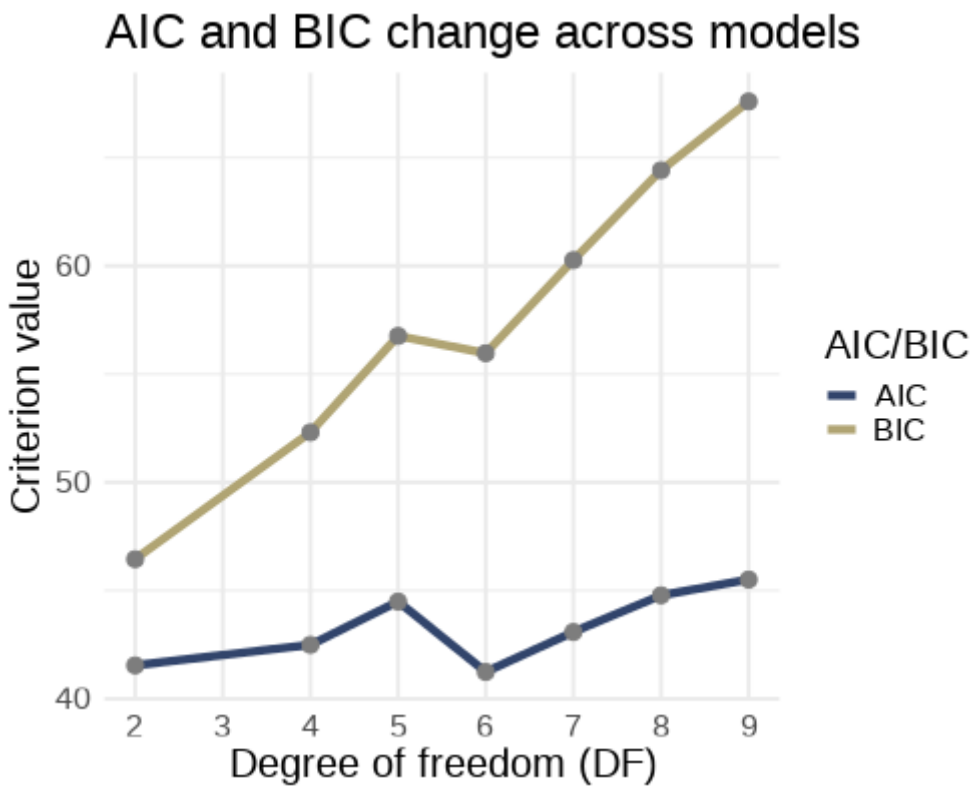


Figure 119: AIC/BIC of Contacted School Nurse Models

Further diagnostics in Figures 120 and 121 revealed two potential causes as possible outliers – these cases were also present in the previous models (57 and 11). In addition to cases 57 and 11, case 34 may also be an outlier. Removing cases 11 and 57 led to an increase in the log of odds and SE, and removal of case 34 did not seem to matter as the log of odds changed only a little (not reported). No cases were removed ultimately to keep SE low and avert further decrease in participant's number.

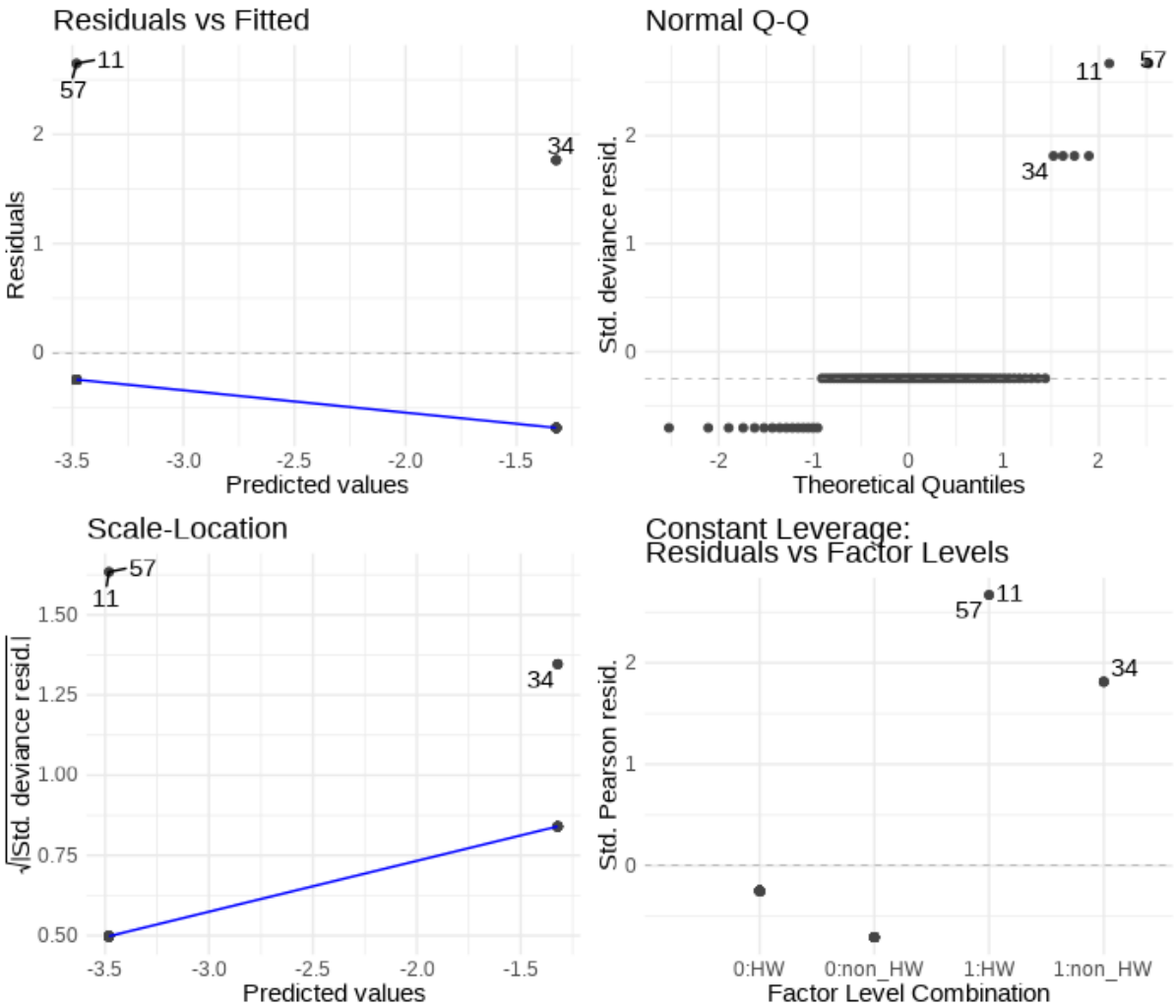


Figure 120: Diagnostic of Contacted School Nurse Models (1)

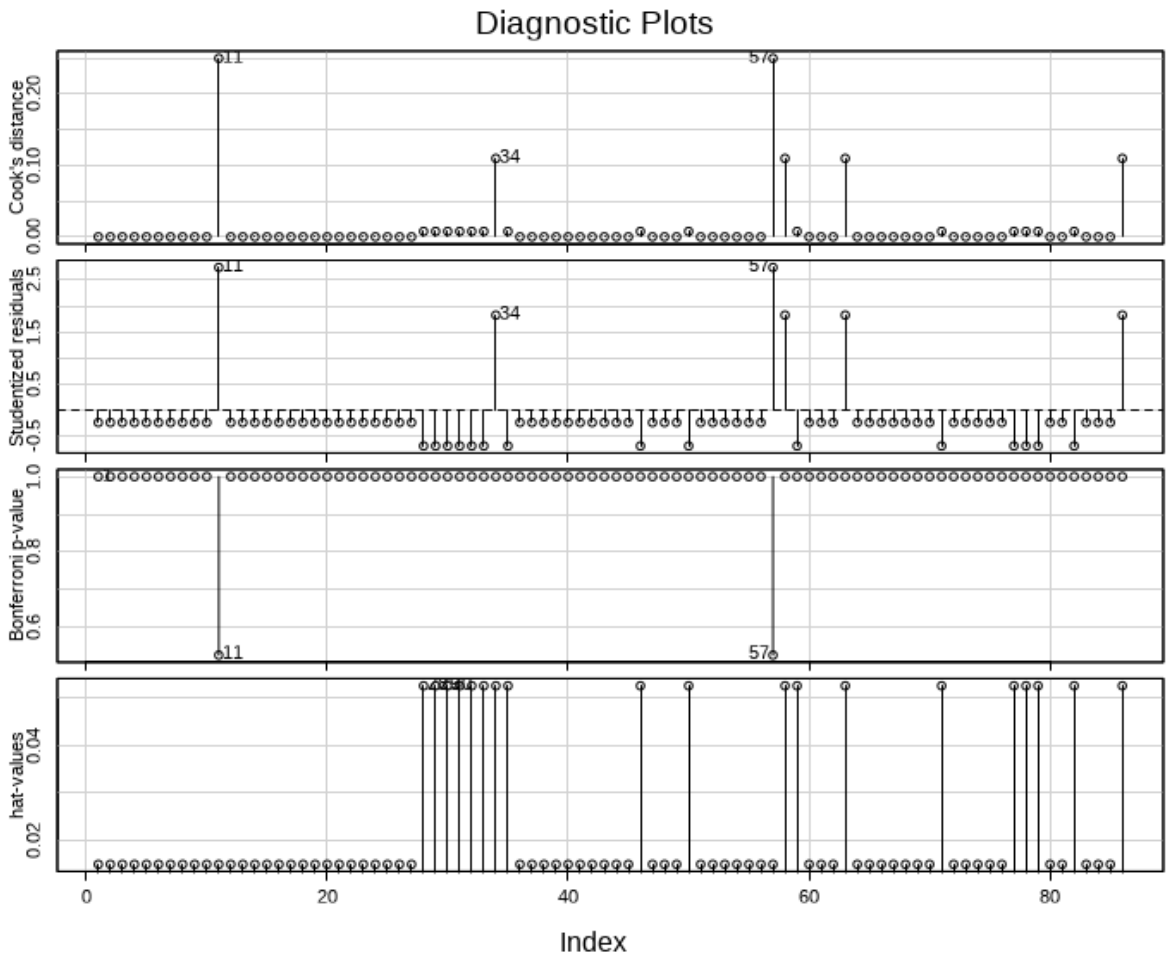


Figure 121: Diagnostic of Contacted School Nurse Models (2)

Tables 67, 68, and 69 represent the results of coefficients, probabilities, and fit statistics of the final model (respectively). The tables indicate that if non-HW results were received, the chance to contact the school nursing team was higher by a factor of 8.67, with the log of odds 2.16 and 95% CI 0.44 – 4.20 than when the results were health weight. This reflects the probability or proportion of approximately 21% with a wide CI at 95% between 8% and 45% (Table 68). However, odds ratios were preferable here as they are safer to interpret.

Table 67: Final Model Estimates for Contacted School Nurse

Term	Estimate	Std. Error	Statistic	P.Value	Conf.Low	Conf. High	Odds Ratio
(Intercept)	-3.48	0.72	-4.85	0.00	-5.29	-2.32	0.03
Child WeightCatLetter non HW	2.16	0.91	2.37	0.02	0.44	4.20	8.67

Table 68: Final Model Estimated Probabilities for Contacted School Nurse

Group	Estimate [Prop.]	Std. Error	Conf.Low	Conf. High
Child WeightCatLetter HW	0.03	0.72	0.01	0.11
Child WeightCatLetter non HW	0.21	0.56	0.08	0.45

Table 69: Final Model Diagnostics for Contacted School Nurse

Null. Deviance	Df. Null	Loglik	AIC	BIC	Deviance	Df. Residual	McFadden's Pseudo R
43.52	85	-18.77	41.54	46.45	37.54	84	0.14

Figure 122 below eases the interpretation further as it showed a slightly higher chance of contacting the school nurse if the results showed the child was with either underweight, overweight, or very overweight statuses. The CI of non-HW is large, but in theory, it could be assumed in most cases, the chance to contact the school nurse was higher if the parent received the non-HW result. This seemed important as it was significant and previous results did not show the effect of this magnitude.

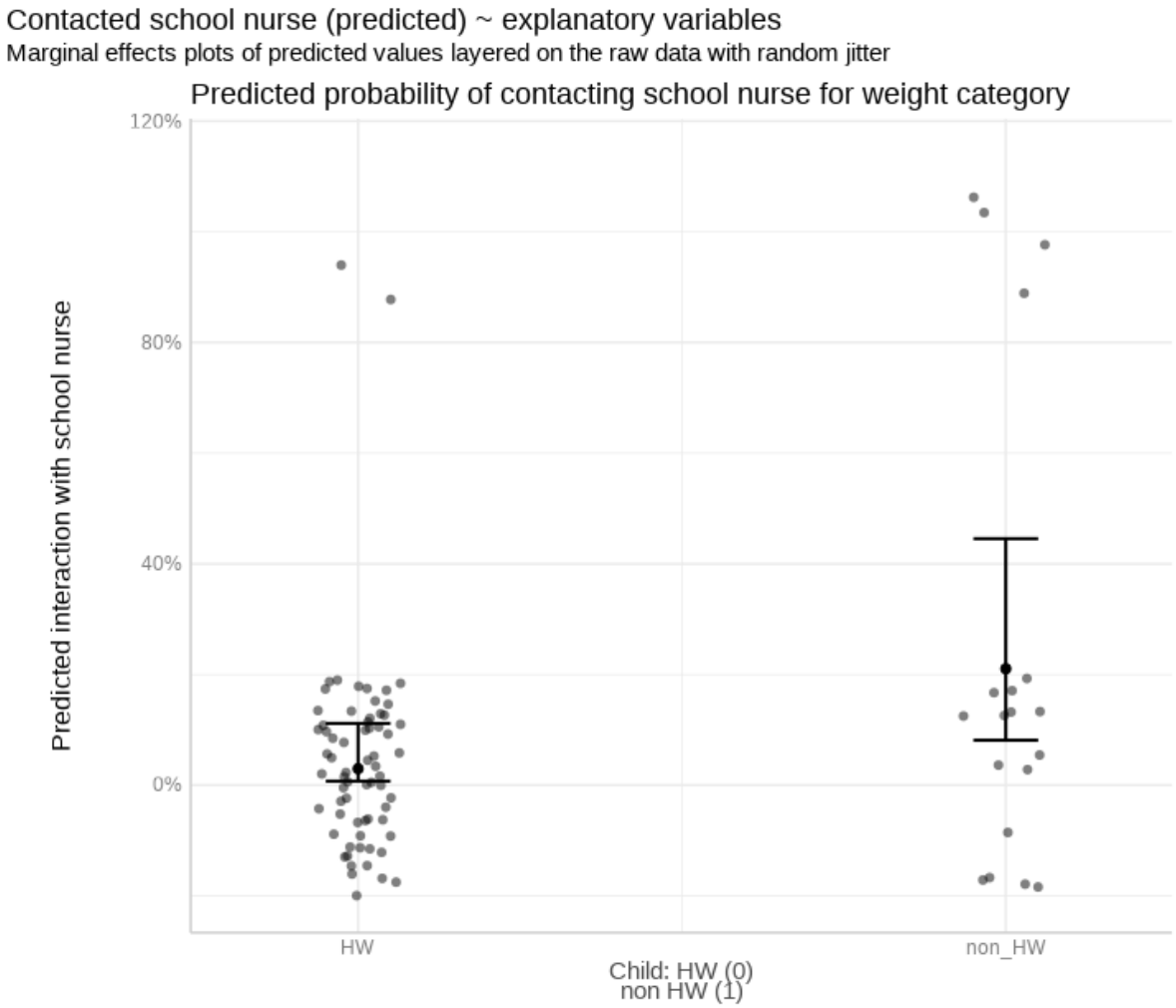


Figure 122: Final Model Predicted Values for Contacted School Nurse

3.8.4 Shared results with children model

The outcome variable presented in this section explored whether parents shared the results in the letter with their children. The question was phrased as *Did you share the letter's result with your child? (e.g., discussed the results, presented them information regarding the result, mentioned their weight)*.

Figure 123 shows that this outcome variable provided a better split between all groups. This could lead to greater use of explanatory variables (provided they were necessary). The higher split was expected given that parents with children classed in healthy weight had little reason to engage with previous questions. The most promising as per Figure 123 seemed panels A and F or child's weight class and what age a child was when the letter was received.

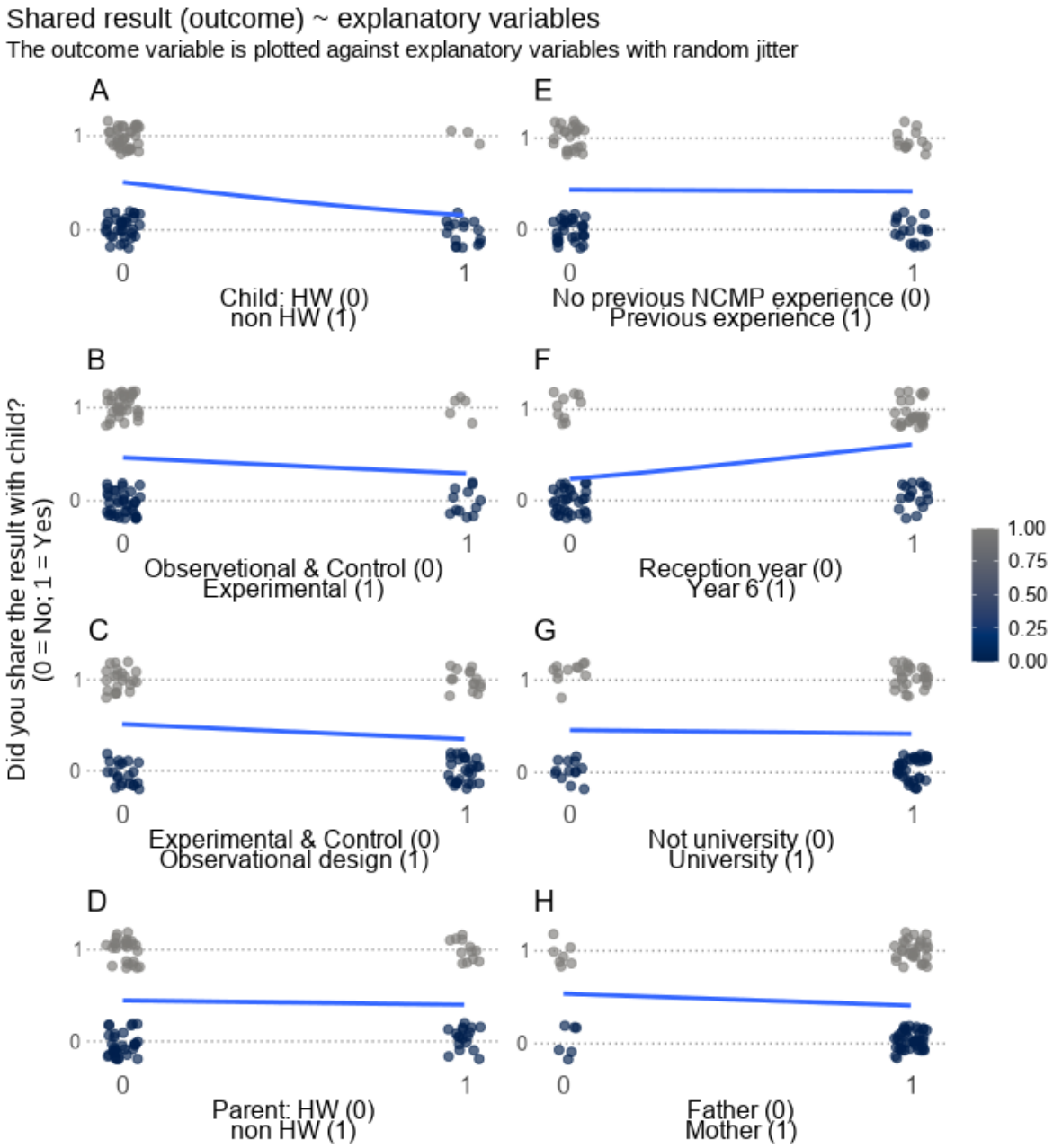


Figure 123: Shared Results and Other Explanatory Variables

This was the only set of models during the fit where the warning due to perfect separation did not occur. Therefore, more reasonable estimates were expected, and Table 70 indicates so. The significant variables were the child's weight result, design version, and child's age. The child's age seemed to perform the best given the low SE value but was included later in the models.

Table 70: Models Comparison – Shared Results

Coefficients	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
(Intercept)	0.03	0.92	1.02	1.09	-0.7	-0.7	0.02
SE	0.24	0.45	0.49	0.52	0.76	0.81	0.92
Pr(>|z|)	0.9	0.04	0.04	0.04	0.35	0.39	0.98
Child WeightCatLetter non HW	-1.7	-1.67	-1.69	-1.72	-2.64	-2.64	-2.74
SE	0.67	0.7	0.7	0.7	0.82	0.82	0.86
Pr(>|z|)	0.01	0.02	0.01	0.01	0	0	0
Design VersionExperimental	*	-1.51	-1.46	-1.48	0.61	0.61	0.78
SE	*	0.7	0.7	0.71	0.96	0.98	1.01
Pr(>|z|)	*	0.03	0.04	0.04	0.52	0.53	0.44
Design VersionObservational	*	-1.21	-1.23	-1.2	-0.25	-0.26	-0.2
SE	*	0.55	0.55	0.55	0.66	0.68	0.68
Pr(>|z|)	*	0.03	0.03	0.03	0.7	0.71	0.77
Parent Weight Stat non HW	*	*	-0.29	-0.29	-0.47	-0.47	-0.32
SE	*	*	0.51	0.51	0.58	0.58	0.61
Pr(>|z|)	*	*	0.57	0.57	0.41	0.42	0.6
Parent Other Children Yes	*	*	*	-0.18	-0.81	-0.81	-0.73
SE	*	*	*	0.51	0.62	0.62	0.64
Pr(>|z|)	*	*	*	0.72	0.19	0.19	0.26
Child Age Year 6 (aged 10 - 11)	*	*	*	*	2.57	2.57	2.88
SE	*	*	*	*	0.76	0.76	0.82
Pr(>|z|)	*	*	*	*	0	0	0
Parent Qualification University	*	*	*	*	*	0.01	-0.16
SE	*	*	*	*	*	0.62	0.63
Pr(>|z|)	*	*	*	*	*	0.99	0.81
Parent Role Mother	*	*	*	*	*	*	-1.14
SE	*	*	*	*	*	*	0.73
Pr(>|z|)	*	*	*	*	*	*	0.12

As expected, given the large coefficients of the log of odds, the odds ratio for the child's age was particularly high, as illustrated in Table 71.

Table 71: Models Comparison – Shared Results

Coefficients	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
(Intercept) [OR]	1.03	2.5	2.78	2.96	0.5	0.5	1.02
Child WeightCatLetter non HW [OR]	0.18	0.19	0.18	0.18	0.07	0.07	0.06
Design VersionExperimental [OR]	*	0.22	0.23	0.23	1.85	1.84	2.18
Design VersionObservational [OR]	*	0.3	0.29	0.3	0.78	0.77	0.82
Parent Weight Stat non-HW [OR]	*	*	0.75	0.75	0.62	0.62	0.73
Parent Other Children Yes [OR]	*	*	*	0.83	0.44	0.44	0.48
Child Age Year 6 (aged 10 - 11) [OR]	*	*	*	*	13.07	13.06	17.87
Parent Qualification University [OR]	*	*	*	*	*	1.01	0.86
Parent Role Mother [OR]	*	*	*	*	*	*	0.32

However, the models were signified by relatively large deviance instead of the previous models and did not explain a large amount of variance.

Table 72: Models Comparison – Shared Results

Model	Null. Deviance	Df. Null	Loglik	AIC	BIC	Deviance	Df. Residual	McFadden's Pseudo R
1	117.54	85	-54.72	113.44	118.35	109.44	84	0.07
2	117.54	85	-51.29	110.58	120.40	102.58	82	0.13
3	117.54	85	-51.13	112.27	124.54	102.27	81	0.13
4	117.54	85	-51.07	114.14	128.86	102.14	80	0.13
5	117.54	85	-44.07	102.15	119.33	88.15	79	0.25
6	117.54	85	-44.07	104.15	123.78	88.15	78	0.25
7	117.54	85	-42.82	103.63	125.72	85.63	77	0.27

Two variables seemed to be necessary. Child's weight class and age category (Reception/Year 6). Therefore, the candidates for the final model should aim to include these variables. Model 5 seemed a reasonable first choice as a candidate for the final model for further analyses. Inclusion of the Child's age also seemed to matter more than the design of the letter. Judging solely by OR, the variable seemed to explain most of the variance as most of the other variable ORs decreased significantly when the model included the age. The model comparison below should help establish the final model – Table 73.

Table 73: Models Comparison – Shared Results

Model	Resid Df	Resid Dev	Df	Deviance	P.Value
1	84	109.44	*	*	*
2	82	102.58	2	6.86	0.03
3	81	102.27	1	0.32	0.57
4	80	102.14	1	0.13	0.72
5	79	88.15	1	13.99	0
6	78	88.15	1	0	0.99
7	77	85.63	1	2.52	0.11

As expected, model 5 provided a significant change in deviance and also low residual deviance as opposed to any of the previous models. This suggests that a child's age was an essential variable when it comes to sharing results.

Looking at BIC and AIC, model 5 (7 DF) shows improvement in BIC and AIC as opposed to previous models (Figure 124). Therefore, model 5 was the final model.

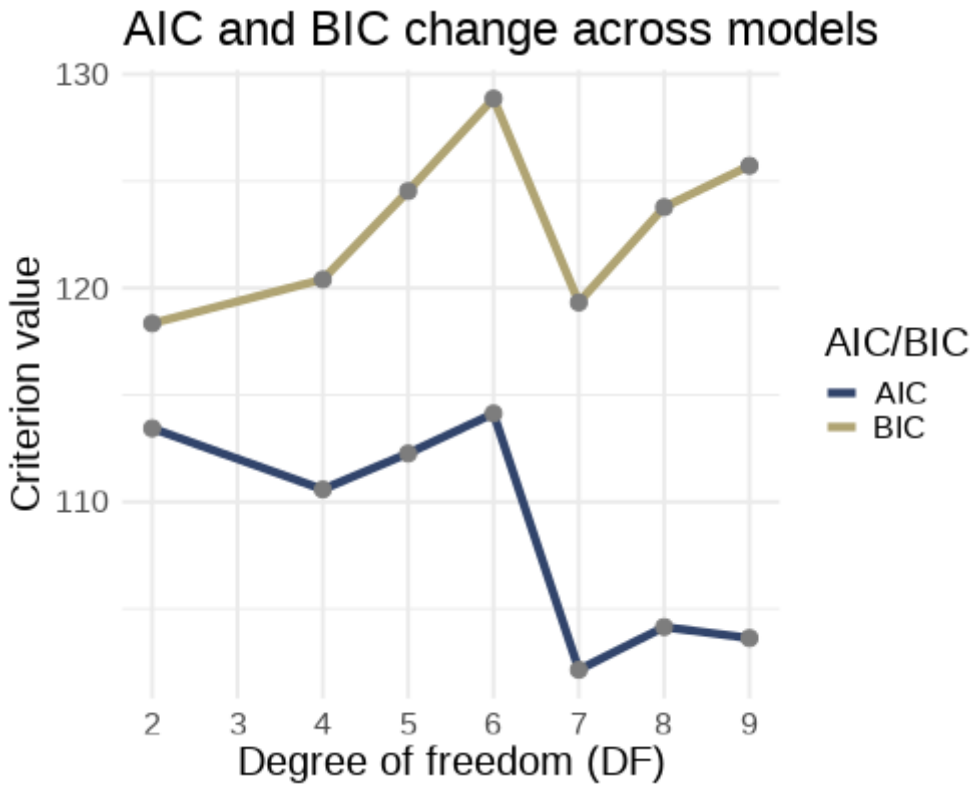


Figure 124: AIC/BIC of Shared Results Models

Residuals did not seem to follow random distribution but showed some pattern; however, this was expected given the model was a generalised linear model with a binomial function fitted on the binary outcome variable (Figure 125).

The more of an issue were potential outliers (Figure 126). Here, case 33 seemed to be one and potentially cases 4 and 15. However, upon examining and comparing coefficients with removed cases vs coefficients with intact model 5, the changes due to case 33 seemed relatively large, and thus, the case was removed as an outlier.

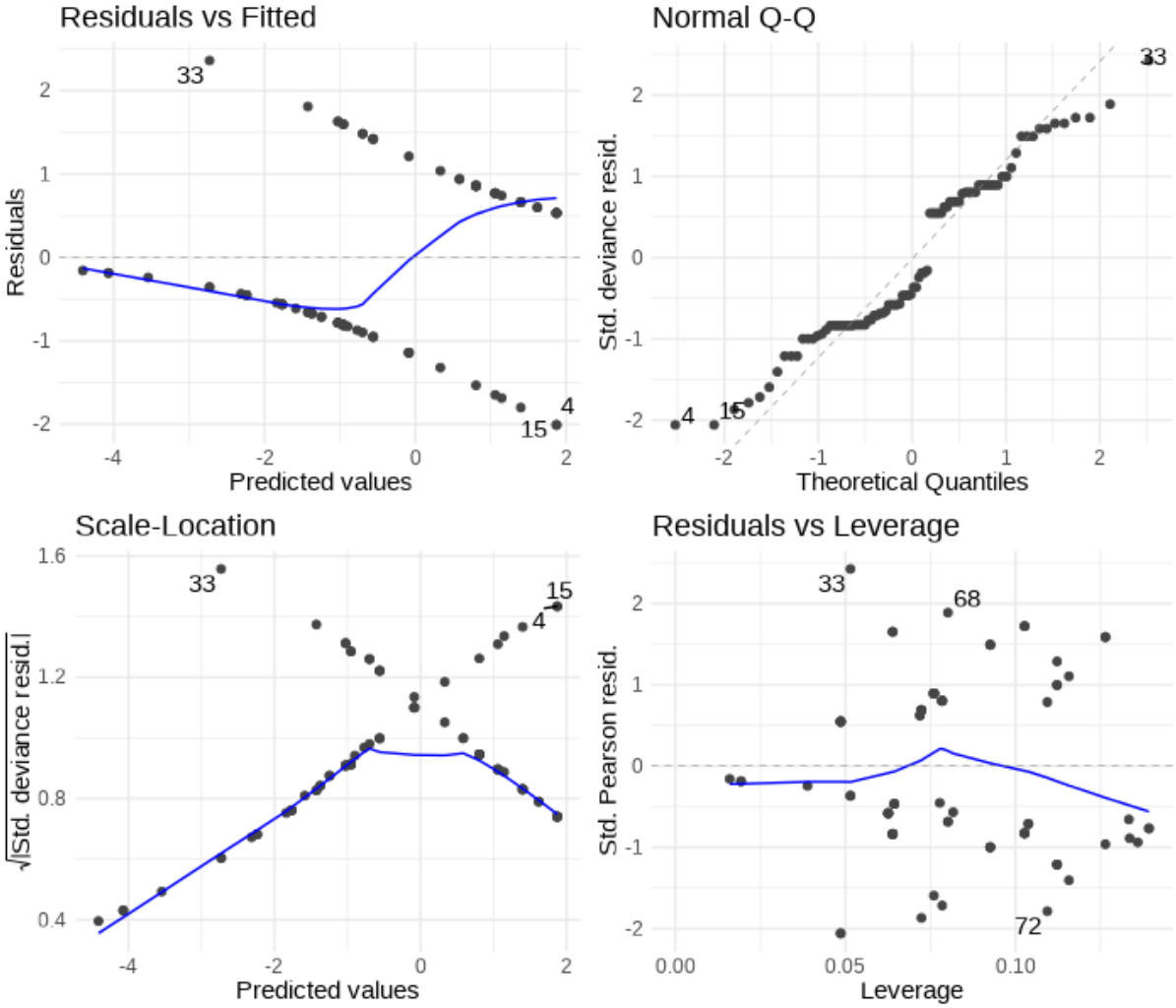


Figure 125: Diagnostic of Shared Results Models (1)

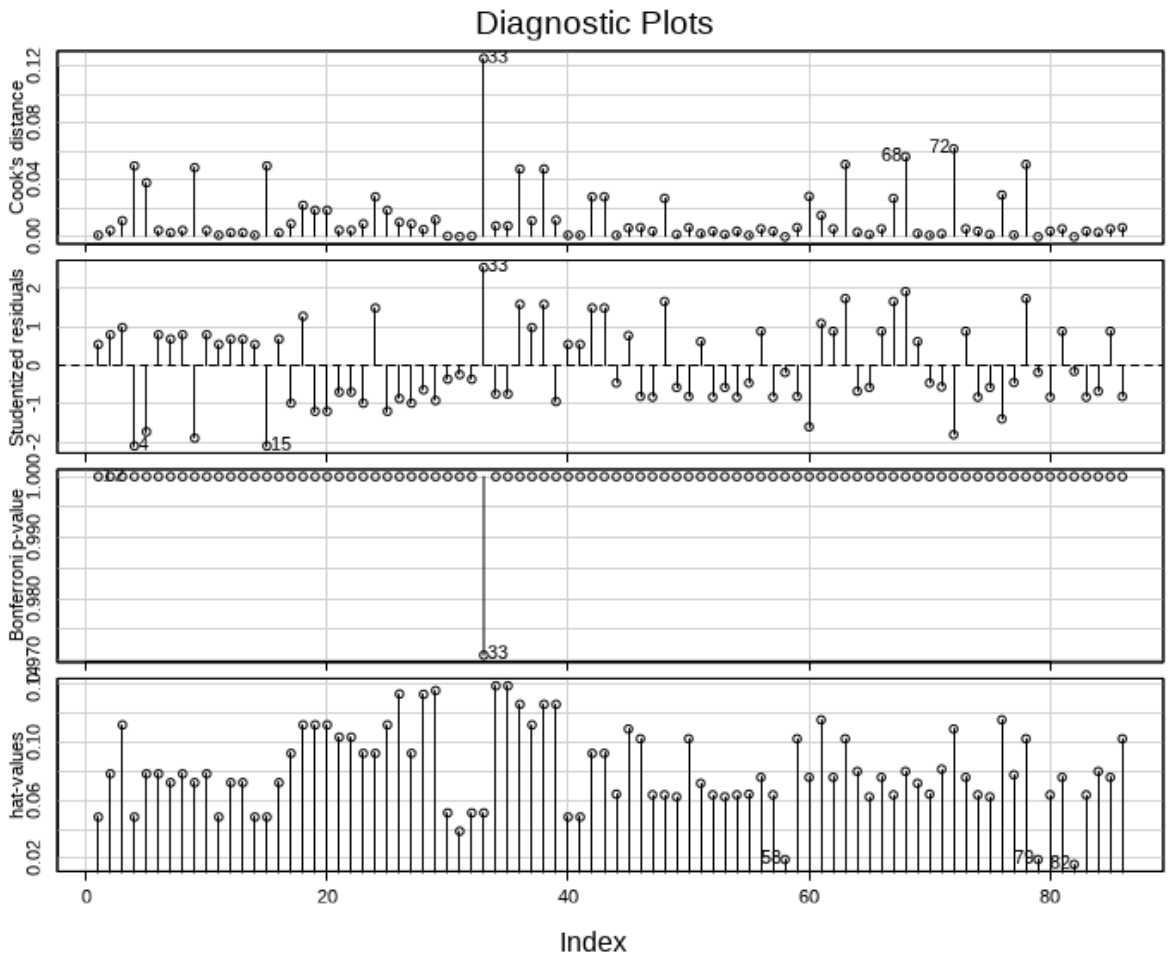


Figure 126: Diagnostic of Shared Results Models (2)

Table 74 shows significant results for weight category and child's age. When the child's weight category was not assigned healthy weight status, sharing the results with children was lower by a factor of 0.04 or log of odds -3.29 with 95% CI between -5.46 and -1.63 as opposed to a healthy weight. This was reflected in proportion/probability Table 75. When the child's age was in Year 6, the chance of sharing the results with them increased by a factor of 16 or log of odds 2.77 with 95% CI 1.32 and 4.47. However, it could be dependent on a child's weight.

No interaction was explored; therefore, any results had to be interpreted as holding the other predictors constant. The interaction with a child's weight would likely reduce the odds ratio for non HW but increase it for HW. This was reflected in the proportion Table 75.

As suggested by the fit statistics, the model explained about 30% of variance/deviance, but some of the estimates seemed to be noise, and the proportion of deviance explained was only slightly better than a null model (null deviance; Table 76).

Table 74: Final Model Estimates for Shared Results

Term	Estimate	Std. Error	Statistic	P.Value	Conf.Low	Conf. High	Odds Ratio
(Intercept)	-0.79	0.78	-1.01	0.31	-2.41	0.70	0.46
Child WeightCatLetter non HW	-3.29	0.95	-3.46	0.00	-5.46	-1.63	0.04
Design VersionExperimental	0.34	1.00	0.34	0.73	-1.63	2.34	1.40
Design VersionObservational	-0.15	0.69	-0.22	0.83	-1.50	1.26	0.86
Parent Weight Stat non HW	-0.34	0.60	-0.57	0.57	-1.56	0.84	0.71
Parent Other Children Yes	-0.91	0.66	-1.38	0.17	-2.33	0.32	0.40
Child Age Year 6 (aged 10 - 11)	2.77	0.79	3.50	0.00	1.32	4.47	16.00

Table 75: Final Model Estimated Probabilities for Shared Results

Group	Estimate [Prop.]	Std. Error	Conf.Low	Conf. High
Child WeightCatLetter HW	0.31	0.78	0.09	0.68
Child WeightCatLetter non HW	0.02	1.27	0.00	0.17
Design Version Control	0.31	0.78	0.09	0.68
Design Version Experimental	0.39	0.71	0.14	0.72
Design Version Observational	0.28	0.57	0.11	0.54
Parent Weight Stat HW	0.31	0.78	0.09	0.68
Parent Weight Stat non HW	0.24	0.88	0.05	0.65
Child Age Reception year (aged 4 - 5)	0.31	0.78	0.09	0.68
Child Age Year 6 (aged 10 - 11)	0.88	0.68	0.66	0.97

Table 76: Final Model Diagnostics for Shared Results

Null. Deviance	Df. Null	Loglik	AIC	BIC	Deviance	Df. Residual	McFadden's Pseudo R
115.84	84	-40.83	95.66	112.75	81.66	78	0.3

The model did not include the interaction between a child's age and weight in the letter by the outcome variable. Nonetheless, this can be illustrated in the following contingency Table 77 with frequencies and proportions.

Table 77: Contingency Table for Shared Results

Shared results (No = 0)	Child: Weight cat. (HW = 0)	Child: Age cat. (RY = 0)	Freq.	Prop.
0	0	0	26	53%
1	0	0	9	24%
0	1	0	6	12%
1	**1**	**0**	**1**	**3%**
0	0	1	7	14%
1	0	1	25	68%
0	1	1	10	20%
1	**1**	**1**	**2**	**5%**

The interpretation of the information in Table 77 is that when the child's weight was classed as non-healthy weight (1) and in Y6 (1), only two (5%) parents shared the results with their children. Interpreting further, only one parent (3%) did so when the child was in RY (0).

In contrast, more parents did not share results at all. As per the table, six parents (12%) did not share the results with children in RY (0) and ten (20%) with children in Y6 when the weight was classed as non-healthy (1).

In other words, parent's did not share the results rather than share them when the NCMP classed their children with non-healthy weight.

This was different for the healthy weight, where Table 77 shows that parents shared the results if the child was in Y6 (68% shared HW results). The contingency table shows a Chi-squared value of = 26.972 with 4 DF, and significant p = 2.014e-05.

Finally, to guide the interpretation as with previous models, see Figure 127. The figure confirms the results from the tables above. Importantly the probability of contacting the service was dependent on weight and age. If the weight was non-HW, not many parents shared the results; however, many more did so if it was HW. The figure also shows subgroups that are visible in the plots (even with random jitter), and these were the age groups where parents were much more likely to share the results if a child was in Year 6 than in RY.

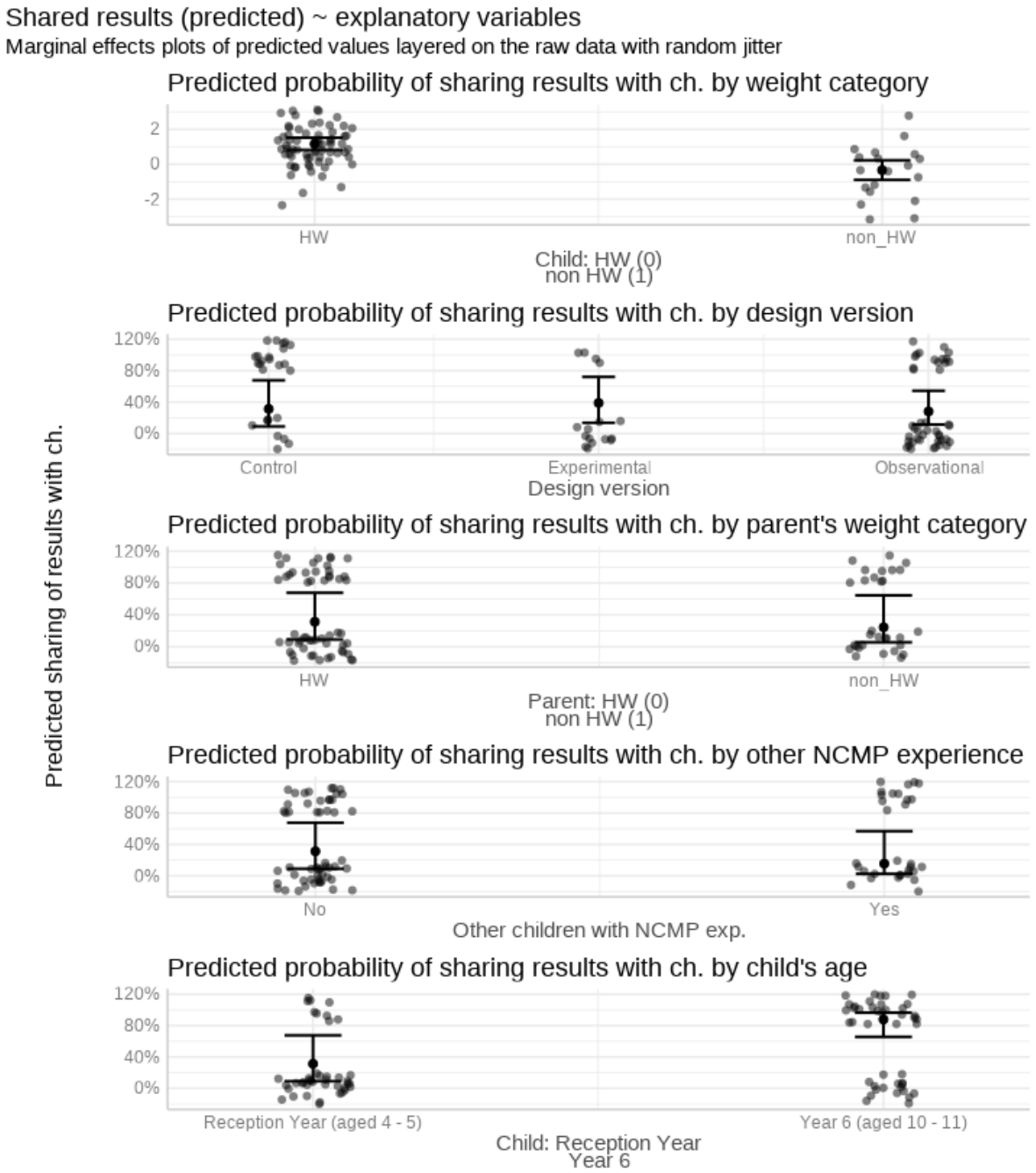


Figure 127: Final Model Predicted Values for Shared Results

3.8.5 Summary of the Findings

Overall, the category of weight results seemed to be the most important explanatory variable. The probability of parents contacting a service was 0.08 [SE = 0.85, 95% CI 0.02 to 0.32] when the letter was healthy weight result, but 0.39 [SE = 1.10, 95% CI 0.07 to 0.85] when the weight was any other with Mc Fadden's Pseudo R = 0.22. The probability of contacting a GP was 0.01 [SE = 1.01, 95% CI 0.00 to 0.10] when healthy weight and 0.05 [SE = 1.03, 95% CI

0.01 to 0.29] when any other weight with Mc Fadden's Pseudo R = 0.04. The probability of parents contacting school nurse was 0.03 [SE = 0.72, 95% CI 0.01 to 0.11] when the result was healthy weight and 0.21 [SE = 0.56, 95% CI 0.08 to 0.45] when any other weight with Mc Fadden's Pseudo R = 0.14.

When asked whether parents shared the results of the letter with children, the results suggest that if the child received the healthy weight result, the probability of sharing was 0.31 [SE = 0.78, 95% CI 0.09 to 0.68], and 0.02 [SE = 1.27, 95% CI 0.00 to 0.17] when the results were any other weight. However, a particularly relevant variable as to whether parents shared the results was the child's age; if the child was in Reception year (4 – 5), the probability of sharing the result was 0.31 [SE = 0.78, 95% CI 0.09 to 0.68], but when the child was older, in Year 6 (10 – 11), the probability of sharing the results was 0.88 [SE = 0.68, 95% CI 0.66 to 0.97]. The overall model had McFadden's Pseudo R = 0.30.

The findings suggest that the feedback letter did not lead to a behavioural response in terms of contacting service, GP, and school nurse, with the last being the most promising. Additionally, parents also seemed to share the results with children, determined by the child's age group (older), and the result (healthy).

3.9 Study 3 – The Analytical Process of Framework Analysis

The following appendix provides further details about the themes identified as part of the framework analysis. The table below summarises the frequency of identified codes in each corresponding theme.

Table 78: Framework Analysis Themes and Codes

Themes	Codes	Files	References
01 Moment of receiving the result letter	01.1 Taking actions because of the letter	20	25
01 Moment of receiving the result letter	01.2 A centre of focus for parents	20	20
01 Moment of receiving the result letter	01.3 Reflecting the child's lifestyle and weight history	6	15
01 Moment of receiving the result letter	01.4 Discard or keep the letter	19	20
01 Moment of receiving the result letter	01.5 Experiencing the bad letter	13	22
01 Moment of receiving the result letter	01.6 Experiencing the good letter	7	14
01 Moment of receiving the result letter	01.7 Strategies of reading the letter	19	19
02 Experience with the experimental letter	02.1 Feelings about the letter tone	18	18
02 Experience with the experimental letter	02.2 Describing the negative sentiment	12	18
02 Experience with the experimental letter	02.3 Describing the positive sentiment	19	42
02 Experience with the experimental letter	02.4 Overall impressions (Describing the letter)	20	26

02 Experience with the experimental letter	02.5 Potential to motivate	20	20
03 Experience with the standard letter	03.1 Feelings about the letter tone	20	24
03 Experience with the standard letter	03.2 Describing the negative sentiment	12	27
03 Experience with the standard letter	03.3 Describing the positive sentiment	12	29
03 Experience with the standard letter	03.4 Overall impressions (Describing the letter)	20	27
03 Experience with the standard letter	03.5 Potential to motivate	20	20
04 Changing the experimental letter	04.1 Do not compare children sentence	4	11
04 Changing the experimental letter	04.2 Social difficulties sentence	1	2
04 Changing the experimental letter	04.3 Perceived as judging	1	1
04 Changing the experimental letter	04.4 Perceived as patronising	3	4
04 Changing the experimental letter	04.5 Avoid reliance on BMI	1	1
04 Changing the experimental letter	04.6 Avoid using black & white	2	2
04 Changing the experimental letter	04.7 Improve the layout of results	9	18
04 Changing the experimental letter	04.8 Increase fonts	1	1
04 Changing the experimental letter	04.9 Keep it possible but not necessary	1	3
04 Changing the experimental letter	04.10 Make it less formal	3	4
04 Changing the experimental letter	04.11 Make it more positive	4	7
04 Changing the experimental letter	04.12 Make it more straightforward	3	4
04 Changing the experimental letter	04.13 Make it personalised	2	3
04 Changing the experimental letter	04.14 Make it shorter	4	9
04 Changing the experimental letter	04.15 Provide more focus on lifestyle	1	2
05 Changing the standard letter	05.1 Avoid using black & white	2	2
05 Changing the standard letter	05.2 Improve the explanation of the results	2	3
05 Changing the standard letter	05.3 Improve the layout of results	6	14
05 Changing the standard letter	05.4 Include further visualisations	1	1
05 Changing the standard letter	05.5 Keep it possible but not necessary	2	3
05 Changing the standard letter	05.6 Make it more personalised	4	4
05 Changing the standard letter	05.7 Make it more readable	2	4
05 Changing the standard letter	05.8 Make it more supportive	7	19
05 Changing the standard letter	05.9 Make it shorter	1	2
05 Changing the standard letter	05.10 Make it softer	7	14
05 Changing the standard letter	05.11 Perceived as assuming	4	5
05 Changing the standard letter	05.12 Perceived as medicalising	4	8
05 Changing the standard letter	05.13 Perceived as patronising	1	1
06 Parental recommendation for the NCMP	06 Parental recommendation for the NCMP	11	16
06 Parental recommendation for the NCMP	06.1 Add further tips or information	3	3

06 Parental recommendation for the NCMP	06.2 Encourage professional support		4	5
06 Parental recommendation for the NCMP	06.3 Utilise public outreach		2	2
06 Parental recommendation for the NCMP	06.4 Improve the use of C4L		6	6
07 Discussing the result with children	07.1 How (why) is the result shared		7	8
07 Discussing the result with children	07.2 Reasons (and concerns) why the result is not shared		13	20
07 Discussing the result with children	07.3 What may help when the result is shared		16	17
Total		**53**	**422**	**615**

3.10 Study 3 - Findings of the Framework Analysis

The following sections show additional themes considered less relevant to the investigated research question as part of the framework analysis.

3.10.1 Theme 1 – Moment of Receiving the Results Letter

The codes in the first theme cover “the moment” when parents received their child’s letter with weight and height results (the original letter sent by their LGA). The theme contains seven codes identified across the segments of text. Across the codes, parents shared their reactions to receiving the letter, strategies taken to read the letter, and actions taken after reading the letter.

Most actions were determined by the results parents have received. Codes 1.5 and 1.6 discuss how parents experienced “the good” (healthy weight status) and “the bad” (another weight status) letters. Codes 1.1 and 1.4 reflect actions and behaviours parents associated with the original letter, while Codes 1.2 and 1.7 focus on how parents read the original letter. Finally, Code 1.3 provides information about parents' reflections associated with the child’s lifestyle.

3.10.1.1 Taking actions because of the letter

The first code was limited to the description of behaviours prompted by the letter parents received. These were any actions caused by the letter and reflected by parents. The code occurred across all interviews in some form.

Analytical summary: Parents provided a variety of reactions to receiving the NCMP letter. Some parents did not take any actions and felt none was required as a result was in healthy/average (HW); other parents contacted school nurse to make a complaint (OW); some parents felt that the letter did not have any authority to illicit any actions as they knew their child the best (UW); some parents knew their child was healthy range irrespective of the results because the child is active, wears appropriate clothes in terms of size for their age, or has healthy lifestyle/diet (OW); some parents told me that they were already doing something, such as visiting GP/dietitians, or managing this through self-help (OW); lastly, some parents

also told me they contacted OneLife (OLS), nurse or GP intended to join a service (OW, VOW), but this was potentially biased as some parents were recruited throng the OLS.

There were several groups of parental responses to the letters from the analytical summary above. The first group were parents who did not feel any actions were necessary. In this group, three types of responses from parents were observed. The first response was provided by parents who felt no actions were necessary because their child's result was with healthy weight status and have received the letter with such a result. This can be exemplified by the following comment from Parent 06 (HW):

> No, he's fine, everything was a pass and he's growing in line with as expected so I didn't think I needed to change anything.

The second response was provided by parents who felt the letter did not have any authority to recommend or request any actions from them, as shown in the comment from Parent 09 (UW):

> Exactly, and I, yeah, so I think I would know, it sort of reminds me a bit of the, when you go and have your baby weighed and they tell you what centile they're on and my three youngest children are never ever going to be, they're heritage of where they're from means it's really really unlikely that they're going to conform to a centile which is based on white American middle-class babies so I think it's really silly and pointless to kind of compare them to those kind of children so they're never ever going to fit in the centiles in the way that they're supposed to, and I feel the same about the letters really.

In the last response were parents who felt their child was with healthy weight despite the letter as they can wear appropriate clothes, eat healthily, or are active. Parent 20 (OW) illustrates this:

> No, just what I described. My daughter was wearing the sized clothes relevant to her age group. I didn't feel that she was, that she looked overweight, that she struggled with doing any sort of exercise. She eats a fairly regular diet for sort of fruit and vegetables, probably not as much as what she should do but I think that's quite good for a five-year-old. I think they are sort of a picky eating, so I felt that there was no action to be taken.

The second group were parents who decided to take action due to the letter or were already doing something. Such actions included lifestyle changes, professionals' contacts, and potential contacts with LGA representatives to issue formal complaints about the letter. The following two comments illustrate this.

The first was a parent who felt the letter was concerning and decided to formally complain and share her concern with the Head Teacher and the School Nurse:

> I made an appointment with the School Nurse, and I put my concerns in writing to the Head Teacher. No, I didn't email her, I wrote to the Head Teacher in the first place and showed her the letter. She agreed with me that my child is perfectly healthy and

> actually she wasn't aware of the content of what got sent to parents. That's something you might want to fix. (Parent 08, OW).

The second was a parent who decided it would be good to contact the School Nurse, and this then became a referral route to OLS and resulted in programme attendance:

> Yeah, I did because I phoned the School Nurse to start off with and then she put me in touch with One Life and we booked on their 10-week course, and we attended that and completed it. (Parent 15, OW)

3.10.1.2 A centre of focus for parents

The second code describes parts of the letter that were important to parents. Parents often paid considerable attention to them before they reviewed the rest of the letter.

Analytical summary: Some parents were not focused or interested and simply skimmed through the letter (all weight results); others focused on health and weight information, but once they acquired the information, they continued and skimmed the rest of their letter (all weight results); some parents paid more attention to the language and specifically to the words such as "overweight" or "very overweight" (only the non-healthy weight results); notably, all parents said that they looked at the results, but only some read it all in detail (all weight results).

The summary stemmed from the following groups of parents. In general, all parents had at least scoped through the entire letter, but most parents focused on the results section, for example:

> No, just really what I looked at was the actual height and actually how her, how high she is and her weight, but I really just skimmed over it. I didn't really take in a deep knowledge of it. (Parent 14, OW)

Parents who received healthy weight results were more likely to simply scope through the letter rather than review it in detail, for example:

> Well I suppose the box helped draw to the weight and height and I think the [core] didn't have anything of concern, I just kind of read the rest quickly. (Parent 03, HW)

Parents who received letters with results other than healthy weight were more likely to point at the language and tone of the letter (before even being asked about this directly), the following example illustrates this:

> Interviewer: Did you focus on anything specific in that letter? Respondent: The word overweight. (Parent 08, OW)

3.10.1.3 Reflecting the child's lifestyle and weight history

This code was used for segments where parents started describing their past experiences and reflections related to the topic of weight in their family. Parents often provided a rationalisation for their actions. Typically, the code occurred without further facilitation from the interviewer.

Analytical summary: The NCMP letter triggered reactions from parents who felt it was fitting to describe their family history and/or experiences with introducing lifestyle changes in their

family. Some parents provided accounts that rationalised the decisions they made in the past (OW); others described in detail the child's individuality and history (OW); parents with OW or VOW also pointed that the letter did not consider the context of genetic disorders, autism, eating habits, and eating disorders which was a salient context for parents whose children experienced these.

This code was prevalent among parents who did not receive the letter with HW results but overall was prevalent among selected parents (6 out of 20). The code was presented in several forms.

First, some parents decided to rationalise their decisions. For example, in the excerpt below, a parent argued that there was no need to take any actions with regards to the weight of their child because the clothes were normal for her age group.

> My daughter was wearing the sized clothes relevant to her age group. I didn't feel that she was, that she looked overweight, that she struggled with doing any sort of exercise. She eats a fairly regular diet for sort of fruit and vegetables, probably not as much as what she should do but I think that's quite good for a five-year-old. I think they are sort of a picky eating, so I felt that there was no action to be taken. (Parent 20, OW)

Other parents described a child's individuality and history as a means to disregard the resulting weight in the letter. This was a relatively common pattern – parents felt the letter did not reflect any of their child's individuality, as per the excerpt.

> (…) sometimes when you get these numbers and these letters which display figures against your tiles in terms of the weight actually you as a parent know how active and what kind of food you feed your children but sometimes I think it's what's in the food rather than what you're actually feeding them because my *Anonymous* she's an active child. She loves sports. She loves physical activities; do you know what I mean? So, she shouldn't really be the weight, she shouldn't really be displaying the weight that you've listed. (Parent 14, OW)

For such parents (above), it was not a matter of the result in the letters because they knew there was a broader context they needed to consider.

Last, parents whose children had some additional individual needs often reported that the letters did not account for their children's needs. The mother's excerpt below illustrates that she felt the story was incomplete without sharing further background information about her child.

> I think I've filed it somewhere, but we never took any action, and my oldest child has chromosome disorder and that is a microdeletion and within that disorder being overweight can be one of the concerns, one of the symptoms. (Parent 19, OW)

While the interviews did not focus on this aspect specifically, parents felt it was important to share. There were no probing questions into the child's individual condition, but these excerpts illustrate that parents reflect a different level of detail compared to what the letters can bring – only the weight and height information (commonly).

3.10.1.4 Discard or keep the letter

This code refers to segments where parents described what they did with the letter itself once they read it.

Analytical summary: Parents described whether they kept or threw away the NCMP letter. Most parents kept the letter in a folder, a file, or as part of the child's “red book” (most parents, all weight results). However, some parents threw the letter away, recycled it or such as they did not feel it was useful (all weight results); others kept it because they wanted to contact service (OW, VOW); but some also said they “destroyed” the letter or wanted to bin it because it was not a “pleasant” letter (OW, VOW).

The reactions to keep or discard the letter (summarised above) can be illustrated with the following two primary groups of parents. The first group decided to keep the letter somewhere or file it. For example:

> I have a feeling we have kept it and it’s in Anonymous’ red book that you get from the Doctor. That’s where it would be if we haven’t thrown it away. I definitely know we haven’t thrown it away so, so it’s in the red book, yeah. (Parent 1, HW)

This was a common way to handle the letter – i.e., store it as part of the evidence about a child’s growth somewhere close to the “red book” records. It was clear that most parents seemed to have storage mechanism or system for information like this. This was not exclusive to only letters with a healthy weight, as illustrated by the following excerpt:

> I did keep it, yeah, I’m just looking for it now actually because I can’t see where I’ve put it, but I did keep it. (Parent 18, OW)

That said, some parents decided to throw it away:

> No, I threw it away. (Parent 13, VOW)

However, it seems also a case that some parents destroyed the letter, as evidenced by the example provided by the parent below.

> I was on a spa day yesterday and I was talking to the people I was with and three of them had the letters and one of them had it for reception for one of their children and they just ripped it up. (Parent 16, VOW)

The evidence suggests that parents usually kept the letter as part of their child’s health record. However, parents felt they had their child mismeasured in some cases, felt the whole initiative was wrong, or simply disagreed with the result. In such instances, parents were binning or destroying the letter or keeping it to make a complaint.

3.10.1.5 Experiencing the bad letter

The “bad” letter was any which did not deliver the news that the parent’s child was in a “healthy” weight range. Therefore, the code presented here features segments describing overall parental experiences exclusively with such results.

Analytical summary: Parents described their experience with the NCMP letter containing the UW, OW, or VOW results and provided various descriptions. They were upset about the result, felt shocked, angered; parents also felt it was unnecessary, pointless, or uncalled-for; they also felt it was unkind, impolite, rude, and inappropriate. Some were also worried this information might hurt their children; others felt a sense of blame, shame or other negative emotions targeted at themselves; some also denied the result or challenged it as wrong; few parents were grateful to receive the information.

The summary above shows why the name “bad letter” was apt for the UW, OW, and VOW letters. Most parents were upset after receiving the information that their children were with overweight, very overweight, or underweight status. They felt the term “overweight” was unkind, impolite, inappropriate, and hurt their child. This naturally led to how different versions were perceived, but this was analysed in Themes 2 to 5 specifically. The reactions where parents were upset are reflected in the following excerpt by a mother who has received such a letter.

> It’s upsetting because even looking at the results here if I, I know for a fact his weight is not even that high, he’s a good 10 kgs lighter so if anything, probably one of those borderline children yet we’ve been lumped in the same category. [Parent is referring to the example letters] (Parent 08, OW)

This was a relatively relaxed response; some parents were affected by the letters to a greater extent and felt shamed or blamed. For example:

> Well, when I, well when I got it, I felt really guilty instantly and that was my initial reaction for it, and I felt shame, so I think as a parent it’s quite shocking. I knew that my child was overweight, so I had expected that letter, but it was still quite shocking to see. I think he was either very overweight or obese, so it was still quite shocking to see that. (Parent 17, OW)

Importantly, in this excerpt above, the reactions of shock, guilt, and shame came despite the parent being aware of their child’s weight.

The other parent had a similar reaction. Initially, it was aimed somewhat angrily toward the letter (externally), but then to themselves (internally) as a disappointment. They also expressed dissatisfaction with the letter highlighting various medical conditions associated with overweight status (further discussed in Theme 03 / 05).

> Well, one or two words, it says that she’s very overweight and, yeah, I didn’t like this one really because it just says that she’s overweight and these are the health things that can happen. When I read it, when I had my, it kind of was saying that you wasn’t a good parent, I kind of, do you know what I mean? (…) This is it, your child is overweight, you’ve done this, this is what can happen now. (Parent 16, OW)

Finally, it would not be right to claim that *all* parents of children with overweight or very overweight statuses perceived the letters as problematic per se. The parent was able to find familiar terminology, such as “child plump”. Possibly as they were aware of their child’s weight, they were not surprised or shocked by the letter.

> Well I think because when I got my letter about my son he is slightly overweight and although a lot of people say it's child plump or whatever they say I knew he was slightly overweight and so I kind of, the letter wasn't shocking to me and I was quite grateful that I got the letter and showed me the height and the measurement, and the weight and everything, and it assured me that on here it says the results suggest your child is overweight for their age. Well it was quite good that it told me that he was slightly overweight as well. (Parent 11, OW)

The parent in the excerpt above did not ever proclaim their child to be "overweight" but softened the message by using "slightly" or similar wording. Overall, they were pretty grateful for the letter; however, the evidence gathered here suggests that this was less common reaction.

Overall, parents did not react favourably towards the overweight, very overweight, and underweight letters, which was why the theme was coined as a "bad" letter in the first place. The message was negative, and if parents received the message, they attempted to soften it or felt shame, were upset, or were angered. Occasionally they were grateful, but this was not a common reaction.

3.10.1.6 Experiencing a good letter

The "good" letter delivered the news that the parent's child was in a "healthy" weight range. The code features segments describing overall parental experiences with such letters.

Analytical summary: Parents described their experience with the NCMP letter containing the HW result and provided various descriptions. Most were generally unconcerned; did not feel that the letters required any actions; they felt that the result meant that they should keep doing what they did until now.

This briefer (as opposed to the "bad" letter) summary shows the relatively homogenous experience of parents with this result. The experiences can be illustrated with the following excerpts.

Parents who received this letter expressed they were unconcerned afterwards and seemed fine when they received the result. For example, as illustrated in the following excerpt by one father, the letter reassured the parent:

> Obviously, my child's health is paramount so was there anything abnormal, was there anything wrong, no, it was all fine so there was nothing to worry about. (…) I mean without the letter we are a conscious family about eating, diet, and things like that anyway so, do you know what I mean? (Parent 01, HW)

The letter itself was also perceived as a confirmation that their parenting strategy worked, as illustrated here:

> No not really, he passed everything, and everything was fine, so I took it as a good thing that he was growing as expected for a child of his age. (Parent 06, HW)

Parents were also fine with skim reading through the letter. They rarely took any actions and did not keep the letter for a long time, as illustrated by the following excerpt:

> (…) I just skim read through the letter (…) concentrated on the part where it told me my child's height and their weight, and what they thought that was, so she was average (…) she was of average height and average weight for her age so I felt that I didn't need to do anything. (Parent 04, HW)

3.10.1.7 Strategies of reading the letter

The code describes segments where parents reflect on "how" they read the letter and accessed the results.

Analytical summary: Parents described how did they engage with the NCMP letter they received and how did they read it. Some indicated that they were very interested and read the letter carefully (all weight results); some parents said that they to skimmed read as they had experience with this letter from other children (all weight results), but some felt it was not important (all weight results); some read-only the context around the results and the first page, but skimmed the rest (all weight results); it seemed conclusive to that all focused mostly on the first page.

The summary shows that parents either read the letter carefully or skim-read it; however, it also shows that most of them read the first page or the page where the results were shown. This can be illustrated with the two following instances.

In these excerpts, a parent stated they read the letter carefully, often initially focusing on the results and then reading further:

> Yeah, I read it pretty well, yeah. It wasn't a skim read, no. It was definitely, I definitely read it properly, yeah. (Parent 01, HW)

They also read it in case they needed to use it as a reference for the future:

> No, I read it through to obviously see what it was about, and I think we had something with it as well to refer to so obviously I looked at that as well. (Parent 15, OW)

However, some parents skim-read the letter as well. One such parent and probably others did so since they already experienced this when they received the letter for other children:

> Skimming through it because I've had them for other children. (Parent 09, UW)

Some parents focused on the result page, but then they did not want to read further, for example:

> I read the first page with the results thing and then I didn't bother reading it anymore. (Parent 12, OW)

Parents generally seemed to read the letter to a varying extent. They focused primarily on the results, and then they stopped or read a little further. They also seemed to primarily focus on the first page. Later accounts illustrate that the font, colour print, and such influenced this. There were also accounts where parents stopped reading because of an unpleasant sentence, wording.

3.10.2 Theme 6 – Parental Recommendation for the NCMP

The sixth theme occurred across several questions, but usually once parents had a chance to see both letters and reflected on their experience. The theme includes codes with parents' tips to improve the NCMP initiative and had the smallest number of references.

3.10.2.1 Add further tips or information

The code contains segments where parents discuss how the NCMP could be improved by adding more information or tips.

Analytical summary: Parents described that the NCMP overall should add further tips such as – explain that the results were based on the average and "give parents recognition that they are the experts when it comes to their children rather than the nurses and the medical professions" (UW), link with government guidance on exercise tips (OW), acknowledge that there are periods when children bodies are changing (VOW).

The first statement comes from a parent who received the underweight result for their child. They felt that the NCMP did not clearly distinguish that the results were based on an average; therefore, further information clarifying how the results were calculated could benefit such parents. The excerpt follows below.

> …I just think it's really important for parents to understand that it's based on like averages and it's not, you know, your child doesn't have to fit into that average and giving more recognition for parents to be the experts when it comes to their children rather than the Nurses and the medical profession. (Parent 09, UW)

The parents followed the comment with an important statement on providing recognition, but this was already discussed elsewhere. The comment that the child did not need to fit into the average may be especially relevant to those who received the underweight result; however, it may also help to make the letter more approachable for other parents with overweight and very overweight results.

Another parent who received the OW result for their child felt that the NCMP would be improved by providing further guidance on exercise recommendations for children; see below.

> I don't know if you could link it to the Government sort of guidance with regards to how much exercise a child should be doing, that might be a nice thing to let people know... (Parent 18, OW)

Lastly, a parent who received VOW result for their child wanted to see the NCMP acknowledge that children – as they grow, develop, and go through puberty change their weight. This could make the letters more open to interpretation which may be positive as it gives parents more freedom to interpret the result, but also negative as it may lead to confusion about what the result means.

> …a lot of them are going through puberty and they will be overweight at that point but then we need to send these letters telling their parents they're overweight. Now if that is the case it would be nice to have your, their bodies are changing so that they might,

> do you know what I mean, somewhere that explained these kinds of things… (Parent 16, VOW)

These or similar acknowledgements can be localised in the footer of the letters. However, they can be overlooked or ignored since they are in the footer and written in technical language.

These tips could further improve the NCMP, but it may also be something that LGAs need to discuss and decide before implementing. Also, these tips did not relate to a specific letter (e.g., standard or experimental).

3.10.2.2 Encourage professional support

The code contains segments where parents felt it was important to encourage contact with professional support for any parents who wished to change their child's lifestyle.

Analytical summary: Parents described that the NCMP should encourage professional support – supplement parents with something more than C4L, which was not enough to guide parents with VOW/OW/UW result because personalised support was required from professionals (HW), let parents be parents, direct them at professionals such as the school nurse (OW), offer default opt-in appointments with services such as OLS (OW), put more emphasis on the OLS/services in the letters (OW).

Multiple parents across different weight results felt it was essential to urge parents to contact professional help such as service or school nurses and avoid any suggestions to let them do behavioural changes themselves. This was somewhat complicated to balance because other parents would prefer to have the freedom to decide – this was already discussed in the previous codes.

For example, a parent who received a healthy weight status for their child stated the following.

> I think...encouraging the parents to make changes to children's lifestyle without any support, I don't think that's the right approach certainly…I think if you are really bothered and you really want to make constructive changes you need a professional...some professional support to do that even if it's just easy on the end of the day. So I would have the phone number on both letters and quite early on saying if you've got concerns your first action should be to call us and talk through and we can help you and signpost you on what might be helpful. (Parent 02, HW)

Other parents felt the letters did a good job when they pointed parents toward a school nurse, as discussed by a parent who received the overweight result status for their child.

> I like that you're pointing people in the direction of a School Nurse. I don't think people should be encouraged to discuss this with their children unless there's an actual problem. (Parent 08, OW)

Parents also thought that this encouragement to contact professional support could be achieved by emphasising tested services, such as OLS.

> I mean having done the One Life Suffolk course I think more emphasis on that in the letter would be beneficial. It's a very good course to do with the children. It is an eye-

> opener. So I think more emphasis on that, that there's that availability because it isn't, you know, they offer quite a lot and they do, I mean they were very helpful and supportive to us so I think more emphasis on that to encourage people to go along to it because I mean I know my son wasn't the only one in his year group to get that letter. But yet we were the only ones that I'm aware of that have attended one of these courses so it's quite, I think if there was more emphasis on that and what they offer actually more people might look into it. (Parent 15, OW)

These instances provide evidence that parents across various weight statuses of children feel that professional support should be encouraged. However, other parents wanted to have the agency to decide what was the best for their children, and their opinions should also be reflected. A possible compromise could be what one parent suggests in Code 3 (below): having parents pre-agree with involvement in the services. Another way to achieve it could be to ensure the wording avoid direct language and leaves parents enough room to make the critical decision while ensuring the support is accessible. The services need to be linked tightly to the NCMP to make either solution workable.

3.10.2.3 Utilise public outreach

The code contains segments where parents felt that it was important that LGA representatives or service providers commit to engaging actively with the public.

Analytical summary: Parents described the NCMP should utilise public health outreach, such as – provide proactive follow-ups by OLS/services, upon a priori consent by parents (OW), the service provider/school nurse/OLS should visit schools as part of health information campaigns.

Parents suggested what could best be described as a format of public outreach. The suggestion by the parent below was to reach beyond the NCMP by giving space for service providers at schools or similar settings to contact and engage with parents.

> So, I think that that's really positive and maybe it's sort of something to go into schools and to actually (…) maybe talk to classes about obviously the importance of regular exercise. The importance of maybe like swapping the sugary drinks and (…) children are sort of, they are quite bright and they do, so if there's a way of actually engaging the children the children could then take it home and they could educate the parents. (Parent 20, OW)

An alternative suggested by a parent who received a very overweight status for their child would be to have parents pre-agree about being contacted by a service provider.

> (…) I think if One Life Suffolk are aware, obviously if you'd sought permission and consent but if One Life Suffolk aware of the children that are overweight and they can contact that person directly rather than just more generic and hoping that the adults, the parents ring One Life Suffolk I, you know, I know from my work and my experience that actually people are much more likely to cooperate and get engaged in a service if they get a phone call… A supportive phone call maybe. (Parent 17, VOW)

These accounts provide evidence that parents wanted the service providers, LGA's representatives and others to take the initiative and reach out to them outside the medium of the letter. Possibly face to face encounters could be appropriate as phone calls might be perceived as still relatively impersonal.

3.10.2.4 Improve the use of the C4L

The code contains segments where parents discuss the need to increase the visibility of the Change4Life materials.

Analytical summary: provide more than the C4L for parents with UW/OW/VOW (HW), put more emphasis on it and ensure it is printed in colour (HW, OW), emphasise it as a parent didn't even realise it was there (HW), provide it on a separate sheet (OW), include more information about sugar swaps (OW).

Although the interviews did not aim to explore the Change4Life in detail, the letters delivered to parents included this attachment, and so it was attached in the interview examples to facilitate the experience closer to what parents received.

Six parents across all weight categories made some further suggestions and comments about the attachment. The attachments seemed necessary to most of them as it made the letter a little more engaging, but they also shared how these could be further improved or accompanied with additional information.

For example, one parent commented that the C4L caused mixed feelings because no matter how much the campaign tried, it will need to be accompanied by professional help to make an effective lifestyle change in their opinion (also as per the Code 03 above).

> I think the Change4Life stuff is kinda...I have mixed feelings of it, I kinda think it's okay as a campaign desperately as a reminder to everybody generally like those eight tips are good you know think about these things but I don't think that is the solution to child who is, who has, who is overweight or underweight. (Parent 02, HW)

Another parent liked the C4L campaign and attachments and appreciated it as the positive, upbeat, and colourful element of otherwise relatively mundane letters. They provided the following comment.

> I think the second page is great. It's nice and upbeat, and positive, positive images, nice colour. I mean the first page is a standard NHS letter isn't it really, but I do like the Change for Life logo at the top, that definitely makes a difference. (Parent 01, HW)

Similarly, parents found it motivating and suggested providing the C4L on a separate sheet so it can be put on a fridge, for example.

> Yeah, the page with all the yellow boxes, I do really like that. As I say I think if it was printed off as a separate sheet or, you know, in colour so you could pin it up on your fridge and it would look really motivating I think it's a really good resource but I think it maybe gets missed by people when it's in black and white on the back. (Parent 18, OW)

The attachments mainly were a welcomed addition to the letters. However, there was a drawback. The attachments needed to be provided in colour, ideally on a separate sheet, and in a sufficiently large and visible print. This would increase the cost of printing on the one hand; on the other hand, printing them in grayscale on the backside of the letter was likely to be less effective. Nevertheless, parents noted they would appreciate additional attachments, and as discussed in previous codes and themes, even the results could be provided on a separate sheet of paper.

3.10.3 Theme 7 – Discussing the Result with Children

The seventh and final theme describes the parents' approach to sharing the results of the letter with their children. The themes' codes highlight parents' rationale to either share or withhold the results and their views on how weight discussion with their children could potentially occur.

All the codes in this theme were referenced by many parents, i.e., from 7 to 16. The codes provide exciting insights into different parental opinions regarding both standard and experimental letters. None of the codes explicitly aimed to describe either version of the letter, but sometimes parents referenced a specific version.

3.10.3.1 How (why) is the result shared

The code contains segments where parents discuss how and (occasionally) why they have shared the result of the original letter with their child. This code provided other narratives and insights into what seemed crucial for parents in the NCMP letters to decide to share it further with their children.

Analytical summary: Parents explained how the results were shared (the following examples are direct quotes) – we said something like "you are very healthy", we talk about these things regularly (HW), I have explained it a bit in general terms but did not dwell on it (HW), I've told them to motivate them for sport (kick-boxing) (HW), "I told them that we need to eat healthily, and this letter is about how to eat healthily and that we'll go to the holiday club" (OW), I said "oh look your weight and height is fine" because if he remembers the measurement, he should be told (HW), I didn't tell him that he is "obese", I did not want to scare him as he's anxious, but I said he needs some help with his weight (VOW), I did tell this to my child, and I wish I did not, it led to the point that he started starving himself, we showed him the letter (VOW).

The summary above shows the wealth of different reasons across all weight statuses. It seems that parents share the letter to provide motivation (negative/positive) and incite some behaviour change, but it may also backfire with OW, VOW, UW statuses. On the other hand, parents with the HW result seemed to be more willing to share the results. For example, the following excerpt shows why a parent with a healthy weight result status shares the letter with their child.

> My child is doing kickboxing and sometimes she doesn't want to go to the kickboxing. So, I showed her the letter and say look, because you are going to kick-boxing you can eat whatever pretty much you want because you are still good weight for your age and

> your height. I would say it was quite motivating for my child to see that exercise is doing her well (…) (Parent 05, HW)

Other parents with the same status shared it but not as part of any motivation, and it was simply something routine to mention or worth mentioning as the child might have been aware.

> I think we did talk about it, the general height and weight and then growing but not, you know, we didn't dwell on it. (Parent 03, HW)

Parents who received the overweight status in the letter seemed to also share the letter on some occasions. The following is an example of a parent who shared the letter to support her decision to assign the child (Reception year, Overweight result in the letter) into the lifestyle service.

> I showed her the letter and I said that we need to eat healthy because this letter is all about getting healthy and she did understand. She didn't understand much but she was only four at the time and a young four and then when I told her that she was going to the holiday club to learn more about healthy lifestyles she now, now being five, she talks more about healthiness and she actually tells me what's healthy and what's not healthy. (Parent 10, OW)

Other parents of children with overweight status tried to be careful while sharing the letter as they were afraid it might negatively impact their children. For example, the following parent discussed how they shared the letter with their anxious child. In addition, a parent was conscious of the wording and aimed to avoid words such as "obese" when sharing the information.

> I said that we had got a letter to say that he needs some help with his weight, but I didn't say that he was obese. (…) I didn't want to scare him into think (…) he's an anxious child anyhow, I don't think he needs to be told that he's going to get heart disease when he's 10 or 11 years old. (Parent 17, VOW)

Then there was an example of a parent whose child received the very overweight status result, shared the letter, but in hindsight regretted the decision as it led to the development of problems similar to eating disorder.

> I did and I wish I didn't. Yes, I did. (…) Now this was about this time last year. Now I don't know, in January he got sepsis (note: the child also has an autism), he was really really ill and in hospital. Now from then, he did put on weight, he lost a lot of energy so he couldn't exercise so much. He wasn't as fit. So actually he did put on weight over this time, not to be like massive but like you could tell that he'd put on weight so when we had been, do you know what I mean, at one time he was ill and he couldn't eat, and then he was starving himself and he said "well if I don't eat afterwards, I need to lose weight". (Parent 16, VOW)

The examples show that the parents did share the result of the letter in some way. Unfortunately, as the last example illustrated, it may backfire. In both of the examples provided about the overweight and very overweight statuses, the child was already sensitive to the

issue, and most parents were concerned not to share the results directly (and avoided terms such as “obesity”).

Interestingly, the letter developed for one of the sites directly stated that the result should not be shared, but this was frowned upon by some parents who argued it was their decision. Therefore, care needs to be taken when implementing a recommendation on this matter.

3.10.3.2 Reasons (and concerns) why the result is not shared

The code contains segments where parents discussed why they had not shared the result of the original letter with their child. There were 13 parents referenced in this code across all weight statuses for children.

Analytical summary: Parents explained why the results were not shared (direct citations follow) – It is up to me to keep an eye on this as (s/he) is only five, and I think it is a bit dangerous route to share this with him/her (HW), it would not be of any benefit to her to let her know (HW), he is five, and I prefer he just enjoys his little life now (OW), I don't think it matters, and I don't want them to even think about how much they weight (UW), I did not show it as they are already body conscious (OW), he's too young, five (HW), I don't want them to be worried about what they are eating (OW), I did not want to put pressure on him (OW), I thought it would upset him (VOW), it is stigmatising and unnecessary, not something to burden children with (VOW), I don’t want them to be worried about it or feel bad about themselves (OW), because of eating disorders (OW).

Similarly, to share the results with children, a parent had a variety of reasons to not share the letter. Occasionally they specified some element in either the experimental or standard version that further rationalised the decision, but, in most cases, the decision was more related to the children themselves.

The fairly common reason why the results were not shared was the child's age. The following excerpt highlights this as the primary reason, but the parent covered another critical reason a few sentences later. That was to protect the child from the weight discussion, or as the parent who received the healthy weight status for their child explained it in the following excerpt.

> I just don't think it’s...she's too young, she is five and I think any conversation with her about her weight is totally irrelevant at her age. You know like that's up to me to keep an eye on and if I've got concerns, even if I was going to do something about that I wouldn't tell it to her either way. I just want her to be confident and happy and have a good relationship with food and have happy mealtime and as soon as you start mentioning any of that you start to destroy that. (Parent 02, HW)

The parent in the following excerpt who received the result of their child with the overweight status explained the issue in a similar way.

> (…) he’s five and I prefer that he just enjoys his little life, and I’m his parent and I make sure, I’m responsible for him eating vegetables and fruit, and being active and ensuring that the balance is kept right. He’s five. He’s not responsible for those decisions just yet. (Parent 08, OW)

It seems crucial that the children did not consider or take notice of their weight to parents. This was also narrative shared in the following excerpt by a parent who received information that their child is of underweight status.

> Yeah, because I don't want them to even think about how much they weigh. I don't really think it matters. (Parent 09, UW)

Some parents who received the overweight status for their child were also concerned that this might lead to bullying at school or other places; therefore, they decided not to share this with their children, as the following example illustrates.

> The reason I didn't is I didn't want to put that on him, because of him being younger it's not, although obviously he can be aware of the things he's eating it's a case of I can change, I'm more likely to change his diet for the better than what he would and I just do not want, I didn't want that added pressure put on to him, you know, I didn't want him to think that someone has called him fat or overweight or, you know, from a Nurse's point of view I didn't want him to think "oh I got measured at school and now they all think I'm fat". Things like that. So, I didn't tell him that. (Parent 11, OW)

Finally, the previous excerpt follows well with the next one. The parent of children who received overweight status in the letter told me in the interview that they were aware of the stigma associated with higher weight status. Consequently, they wanted to avoid any sort of weight talk with their children because they were afraid it could lead to "pointing" at someone that they were too big or small. The following excerpt illustrates it.

> I just think it's the stigma and I just think it's an unnecessary concern or, you know, feedback for them to have and I think it's very important not to worry about your weight when you're little or let them think that people talk about each, it's okay to talk about each other's weight because you don't want them going and pointing out people that they think are too big or too small. (Parent 18, OW)

These are all legitimate reasons not to share the results with children, and more parents felt this way. Especially if they had children with overweight or very overweight status or were in the Reception year. The phrase *"I prefer that he just enjoys his little life"* sums up the sentiment of the code well as parents did not want their children to worry about weight. However, at least one parent was also well aware of the potential stigma and bullying associated with obesity status.

3.10.3.3 What may help when the result is shared

The last code of the final theme contains segments where parents discuss what would potentially help them if they decided to share the result of the letter with their child. This discussion was hypothetical, and the idea was to further explore the circumstances where parents felt that the letter was safe to share.

Analytical summary: Parents explained what would be supportive if they decided to share the results or which version they would share (direct quotes follow) – I think the version B (the stand letter) would be easier to share because of the layout (HW), I could perhaps share a bit

of the C4L, but otherwise she would be bored – there are no ponies, unicorns or pictures (HW), I would not share a letter which suggests not to discuss this with my child as it would be weird (HW), I would potentially share the experimental version because it has better wording which does not mention the word “overweight” (OW), he would not care about either as he's five, it would need to be presented differently and perhaps with some chart with kids (HW), both letters are fine to share (HW), the layout of standard letter makes it easier to share but it says “overweight” (OW), I would share the standard version as it does not mention comparing my child with other children (HW), the standard because it has better layout, but the experimental has better information (OW), the standard is blunt, harsh so not this one, the experimental letter is preferable because it has more information and is encouraging (OW), experimental because it is more encouraging and supportive (VOW), perhaps the experimental but I would never show him the one with the “overweight” word (OW), they are too young but if I was to share I would not use any letter I would say, “If your body carries too much, then our heart has to work doubly, and our heart will suffer, so we need to be careful about how we eat and what we eat” (OW), I would prefer the experimental version but it would be nice to acknowledge our bodies are changing and such (OW), sample A (experimental) is easier to show (OW).

This code was directly associated with one of the interview questions, which means it contained a larger number of references (n = 16). The code revolved around whether the children would understand the results, their age (i.e., when to share the results), the letter presentation, and the ease of access.

For example, one parent indicated that the letter was not shareable with small children, but page two, i.e., Change4Life, could potentially be shared and brushed over.

> I think, I mean she’s only five so I would only show page two to her. I don’t think I would even, I might point out that you’re height is whatever it is, and you only weigh 25 kgs and mummy and daddy weigh like 69 and 70 kgs. So, it would be a brush over on page one but page two, yeah, definitely. (Parent 01, HW)

Another parent with the results letter of healthy weight status said that some form of a graph with accessible visuals could facilitate the sharing or make the results more understandable – had they ever decided to share it.

> If there was a graph in there and then it was like the smallest kid is this height and the tallest kid is this height, and then there was a little dot in the middle that said this is Anonymous, you know have like the 1 in 100 thing I could show that to him and say “look, you’re perfect, you’re slap bang in the middle, there’s loads of kids smaller than you, there’s loads of kids bigger than you, you’re right in the middle so you’re perfect just the way you are”. That’s the only way I could describe it to him to make it sensible for him. (Parent 06, HW)

Other parents who received overweight result status said that they would not share sample A (control in this case) because it contained the word “overweight” while sample B (experimental) provided more sensitive language.

> Yeah, so sample B (experimental), I would not show her sample A (control) and the suggestions, that is because it refers to her as being overweight where the sample B it doesn't. It just says these results suggest that Noel's weight is above the expected … so the wording is more appropriate. (Parent 14, OW)

Finally, a parent who received an overweight status for their child told me an analogy or a story that they could use to make sense of the results for their children.

> We would say something like "If our body carries too much, then our heart has to work doubly, and our heart will suffer, so we need to be careful about what we eat and how much we eat", but we would never use the word "overweight" or "fat". I know that "fat" is not being used in this letter, but you know it's just to give you an idea of how careful we would be with the language we used with our kids, and certainly we wouldn't show these letters to them. (Parent 19, OW)

In summary, parents would use several methods if they had to hypothetically share the results. The methods evidenced here are analogy or story, a graphical summary with visuals that are accessible, sensitive/careful wording avoiding medicalising language, and providing access to colourful attachments such as Change4Life.

3.11 Study 3 – The COREQ Checklist

The following appendix shows the completed checklist of the consolidated criteria for reporting qualitative studies (COREQ) relevant to Study 3. The checklist was developed from Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. International Journal for Quality in Health Care. 2007. Volume 19, Number 6: pp. 349 – 357.

No Item	Guide questions/description	Answer
Domain 1: Research team and reflexivity		
Personal Characteristics		
1. Interviewer/facilitator	Which author/s conducted the interview or focus group?	Martin Čadek
2. Credentials	What were the researcher's credentials? E.g., PhD, MD	MSc in Psychology
3. Occupation	What was their occupation at the time of the study?	PhD Student
4. Gender	Was the researcher male or female?	Male
5. Experience and training	What experience or training did the researcher have?	MSc in Psychology and PhD training
Relationship with participants		
6. Relationship established	Was a relationship established prior to study commencement?	No
7. Participant knowledge of the interviewer	What did the participants know about the researcher? e.g., personal goals, reasons for doing the research	Appendix 2.5.2 Interview Information
8. Interviewer characteristics	What characteristics were reported about the interviewer/facilitator? e.g., Bias, assumptions, reasons and interests in the research topic	None, bias was mitigated by preparing the interview protocol
Domain 2: study design		
Theoretical framework		
9. Methodological orientation and theory	What methodological orientation was stated to underpin the study? e.g., grounded theory, discourse analysis, ethnography, phenomenology, content	Mixed-Method Research and Framework Analysis

	analysis	
Participant selection		
10. Sampling	How were participants selected? e.g., purposive, convenience, consecutive, snowball	Section 5.2.1 Sampling Design (Convenience sample and snowball; Main text)
11. Method of approach	How were participants approached? e.g., face-to-face, telephone, mail, email	Section 5.2.1 Sampling Design (Phone; Main text)
12. Sample size	How many participants were in the study?	Section 5.2.2 Sample Size (Main text)
13. Non-participation	How many people refused to participate or dropped out? Reasons?	Section 5.2.2 Sample Size (Main text)
Setting		
14. Setting of data collection	Where was the data collected? e.g., home, clinic, workplace	Phone interviews (Participant's place based on their convenience / The investigator's office)
15. Presence of non-participants	Was anyone else present besides the participants and researchers?	No
16. Description of sample	What are the important characteristics of the sample? e.g., demographic data, date	5.4 Sample Characteristics of Parents (Main text)
Data collection		
17. Interview guide	Were questions, prompts, guides provided by the authors? Was it pilot-tested?	Appendix 2.5.5 Interview Protocol
18. Repeat interviews	Were repeat interviews carried out? If yes, how many?	No
19. Audio/visual recording	Did the research use audio or visual recording to collect the data?	Yes (audio)
20. Field notes	Were field notes made during and/or after the interview or focus group?	No
21. Duration	What was the duration of the interviews or focus group?	20 minutes
22. Data saturation	Was data saturation discussed?	Yes. Section 5.2.2 Sample Size (Main text)

23. Transcripts returned	Were transcripts returned to participants for comment and/or correction?	No
Domain 3: analysis and findings		
Data analysis		
24. Number of data coders	How many data coders coded the data?	One (Martin Čadek)
25. Description of the coding tree	Did authors provide a description of the coding tree?	Appendix 2.7. Codebook – Study 3 – Interviews analysis
26. Derivation of themes	Were themes identified in advance or derived from the data?	From the data
27. Software	What software, if applicable, was used to manage the data?	NVivo Pro v12
28. Participant checking	Did participants provide feedback on the findings?	No
Reporting		
29. Quotations presented	Were participant quotations presented to illustrate the themes/findings? Was each quotation identified? e.g., participant number	Yes. Sections 5.6.1 to 5.6.4 (Main text) and Appendix 3.10
30. Data and findings consistent	Was there consistency between the data presented and the findings?	Yes
31. Clarity of major themes	Were major themes clearly presented in the findings?	Yes
32. Clarity of minor themes	Is there a description of diverse cases or discussion of minor themes?	Yes

4 References Included in Appendix

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