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## RELATIONSHIPS BETWEEN **READING FOR PLEASURE** and **CHILDREN'S WELLBEING** in AOTEAROA NEW ZEALAND

November 2024 Ruth Boyask, John Milne, Jayne Jackson, Robyn May, Sabine Blokker

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Disclaimer

The views and interpretations in this report are those of the researchers and not the Ministry of Social Development.

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# EXECUTIVE SUMMARY

## Introduction

Reading for pleasure is important for children as part of a well-balanced, healthy, active, and literate lifestyle (Boyask, May et al., 2022). There is a substantial body of international research that highlights benefits of reading for pleasure for children and their communities. In this study we consider how experiences of reading for pleasure and wellbeing may affect one another, especially whether experiences of reading throughout the life course enhance wellbeing. It focuses upon young people's experiences and perceptions during the COVID-19 pandemic, while considering the effects on this period of prior experiences and characteristics. The pandemic was an opportunity to observe young people's resilience and wellbeing under conditions where many people were affected by uncertainty and instability (O'Brien et al., 2021).

We examined relationships between the experience of reading for pleasure (or reading affect) and wellbeing in three different ways. First, we undertook exploratory statistical analyses, and some regression modelling of secondary quantitative data selected from the

Growing Up in New Zealand (GUINZ) study dataset, a longitudinal cohort study involving approximately 6000 children. The data examined include wellbeing variables collected through the GUINZ COVID-19 Wellbeing survey from 11-year-old (11y) children during the pandemic (n=2,421) and reading affect variables and covariates collected when the GUINZ child participants were 9 months (9m), 2 years (2y), 6 years (6y), 8 years (8y) and 11y.

Second, we analysed using interpretive methods 53 comments made about reading by the 2,421 11y children who participated in the GUINZ COVID-19 Wellbeing survey. Third, we developed nuanced insights about the GUINZ data and findings through participatory methods, including the perspectives of young people of similar age to the GUINZ cohort. Findings from the secondary data and its analysis were examined in discussion with two focus groups made up of 15 participants in total (11 female and 4 male) at 11 years of age, and ongoing consultation with adult library experts, Māori educators, statisticians and reading experts.

Through dialogue with informants and within the team we interpret results through a socio-material/ psycho-social lens, based on the assumption that engagements between people, and between people and different "things" (material or conceptual objects) influence and shape reading behaviours and wellbeing. These engagements have affective qualities that can be felt and described (Boyask et al., 2024).

Our study concludes that some children's affective experiences of reading throughout their life course are associated with positive wellbeing outcomes.

## The experience of reading is associated with wellbeing.

Most of the participants who took part in the GUINZ COVID-19 Wellbeing survey (n=2,421) when the cohort was around 11 years old (11y) reported that their general health was excellent (n=1145), very good (n=709) or good (n=304), with only 61 young people reporting their general health was fair or less good. However, the young people reported they faced some challenges to their mental health. Around three fifths of the cohort exhibited symptoms of depression and anxiety that may have been clinically significant.

In our study, some positive health and wellbeing outcomes are associated with different aspects of reading affect. Those aspects include reading with other people, how children feel about reading, cultural influences on reading and engagement with reading objects at home like books, magazines, and digital texts from throughout the life course. Significant associations between reading and wellbeing were identified in responses to questions related to the most subjective perceptions of general health and support from or feeling connected with others. There were no significant associations between depression and anxiety measures during the pandemic with reading affect variables prior to the pandemic; however, we found an association between lower depression scores and reading together during lockdown.

The GUINZ COVID-19 Wellbeing survey asked respondents to identify the best thing about lockdown. Reading was identified as one of the best of three or more things in 19 of the 53 responses that mentioned reading. In the most complex examples reading sits alongside time with family members, physical activities, creative and purposeful play activity.

For example (participant response):

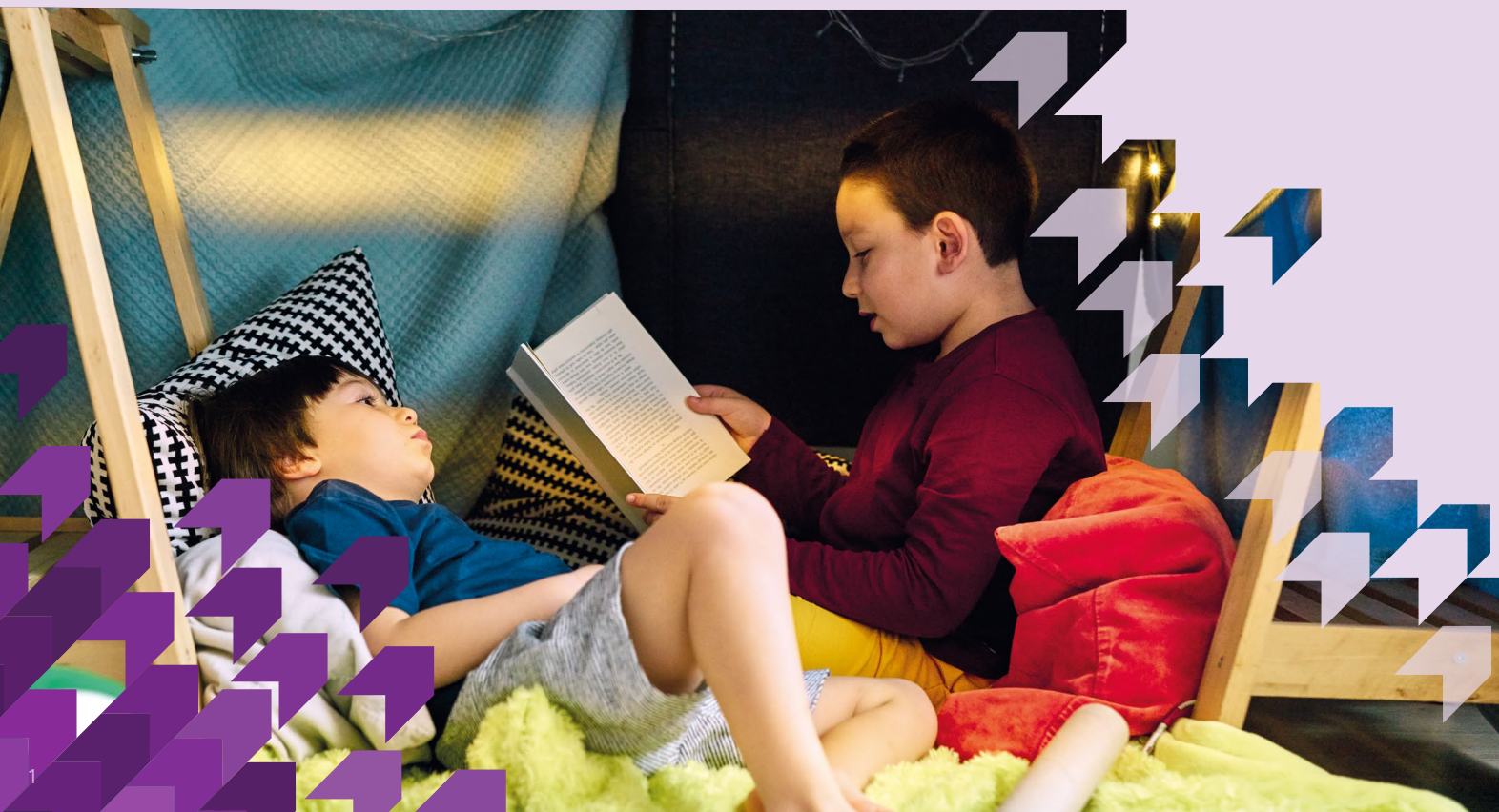
Food, games, movies, card games, sleep, reading, Mau rākau, family time, homework/ schoolwork, talking to friends online.

We recognise that many of the kinds of activity that sit alongside reading come with expenses to families. Reading can be costly, or the costs can be offset through services such as school libraries, public libraries, and free connectivity for digital devices. Many public services were not available during lockdown, putting more burden on families to provide them.

We talked to two focus groups made up of 15 participants in total and of a similar age to the GUINZ COVID-19 Survey participants. There was general agreement amongst the 13 who identified as readers that reading was beneficial for their wellbeing, with many statements explicitly saying so. Some participants compared how they coped during lockdown to others they know who they identified as non-readers. The two focus group participants who identified themselves as non-readers indicated that they did not perceive reading as helpful to their wellbeing.

## Children's reading at home during lockdown

The COVID-19 Wellbeing Survey asked how frequently reading books together with other people had occurred during lockdown. Around half (47.5%) of the participants were reading books together in their bubbles several times a week or more. Notably, 31.8% of participants never or almost never read together during lockdown. These figures may not be good representations of the amount of reading that occurred. The focus group participants did not report frequent reading together, though they reported that they did a lot of reading. For example, one participant stated "... because for me, I don't really like read with my family, but I would definitely read a lot by myself. I would read in my room a lot." They also thought people would have interpreted the question differently, and that means survey respondents were reporting on different things.





# EXECUTIVE SUMMARY continued

Children who enjoy reading often are also involved in many different active, interest-based pursuits (Boyask, May et al, 2022). For some during lockdown, reading was one kind of positive experience amongst many others. Supporting these kinds of experiences for children so all can benefit from reading has economic costs for families, that may make them less accessible to all, especially if they are only provided at home. Library use at 6y seems to be relatively common across levels of deprivation (Ibid.), yet during the lockdown libraries were closed. Children’s comments in the survey suggest they missed access to reading material through libraries.

## Relationships between children’s reading affect and their wellbeing

What we expected to see in results from both the focus group participants and the GUiNZ participants was that lockdown changed the ways children felt about themselves and related to other people (including whānau and friends). What we also wanted to know, was whether engagements with reading from before and during lockdown had affective characteristics that changed children’s experiences of lockdown.

During lockdown, reading made those who enjoyed reading feel like they had a friend, according to focus group participants (“you have a friend there who’s like quite similar and it’s comforting to feel like there’s someone else”). They could find friends within the texts they read and identify with the situations of the characters while real-life friends were distant and engagements with peers largely virtual. We wonder whether reading may have been particularly important for older children during lockdown as reading could provide comfort and normalise their new experiences of moving into adolescence.

## Reading together with others throughout children’s life course is related to wellbeing.

Children and adults reading together throughout childhood is associated with higher odds of feelings of security, being supported, and general good health during the pandemic. Notably, in the exploratory statistics when we looked at reading together with family members across the GUiNZ data collection waves from 9m to 8y we found associations with higher positive childhood experiences scores and greater family support during lockdown in the 11y data.

Reading together more than once a week during lockdown was associated with increased odds of children reporting they had regular family support, a higher positive experiences score, regular emotional support, and were more connected with others. It also lowered odds (OR 0.78, 95% CI (0.66, 0.94)) of a high depression score on the Centre for Epidemiological Studies Depression Scale for Children 10-item short form for measuring depression.

When the association between reading together at 2y and perceived general health at 11y is examined while adjusting for socio-economic and ethnicity factors, we find that early reading together raises the odds of better general health compared with both higher income and European ethnicity. Mothers reading to their children at 2y may have long lasting effects on later perceptions of health that transcend socio-economic and cultural influences.

Focus group participants shared that their reading material became a topic for conversation during lockdown for the young people we spoke to; this was important when there were fewer new experiences to discuss and a more limited social circle (“you could discuss them with your family and like socialise”). Even if others had not read the same book, they could still talk to each other about what they had read. The focus group participants reported that reading, and the conversations they had after reading, made them feel better.

## Cultural factors (engagement with reading objects within a broader culture)

In our results, gender was not a good predictor of reading affect before 8y, however, this changes as the children become older. As children move into adolescence, reading may provide a means of escape, including from gender norms.

There is a discernible trend of children living in areas of less deprivation enjoying and reading more often and having more access to books at home. An exception to the general trend is mothers reading to their children at 5y about their ethnicity or culture, where this is more common in areas of higher deprivation. There is less variation between the deprivation categories for visiting the library weekly.

There are some significant patterns emerging in associations between ethnicity and reading affect. European ethnicity stands out as having the highest percentages in reading frequently and reading together across the life course. It is also markedly higher for numbers of books at home. When household income is examined in relation to ethnicity, it is evident that this social group is also the most affluent. Yet, as we have noted before (Boyask et al., 2022) reading enjoyment is relatively common across ethnicities. This points to the need for equalising children’s access to the enjoyment and beneficial outcomes of reading for pleasure through access and opportunity. Further research also needs to consider how assumptions made from studying the positive effects of reading on children from European backgrounds affect the lives of children from different cultural backgrounds.





# INTRODUCTION

In a prior study we concluded that reading for pleasure may be important for children as part of a well-balanced, healthy, active, and literate lifestyle (Boyask, May et al., 2022). In this study we are investigating the role of reading for pleasure from birth to age 12 on children's wellbeing in Aotearoa New Zealand in greater detail. We examine associations between reading affect, or how children felt about and engaged with reading prior to, during and after the COVID-19 pandemic, with how they experienced wellbeing in their COVID-19 bubbles and since.

There is a substantial body of international research that highlights benefits of reading for pleasure for children and their communities. Children who read for pleasure are more likely to have advanced vocabulary development (Sullivan & Brown, 2015), enhanced school performance, especially if they read fiction (Jerrim & Moss, 2019), more developed brain function (Sun, Sahakian et al., 2023), demonstrate prosocial behaviours at school (Mak & Fancourt, 2020a), fit in better through connecting with others (Wilhelm & Smith, 2016), and make healthier choices around eating and smoking (Mak & Fancourt, 2020b). While these qualities are often seen as individual benefits, they are also qualities of healthy societies along with other traits associated with reading for pleasure that are fundamental to social cohesion and communal life. Individuals engaged in literary reading are more than twice as likely to participate in volunteer or charity work within their communities, and there are positive associations between greater voting activity and higher reading proficiency (Endowment for the Arts, 2007, p. 88).

We are interested in how reading for pleasure and wellbeing may affect one another, drawing upon affect theory, where children are connected in their communities through affective engagements with each other and with cultural and material objects. In an affective analysis reading is a form of engagement with interrelated reading objects

that have human and non-human characteristics (which may include reading texts written about or by others, the literacy education practices of teachers in classrooms, or library time scheduled by librarians (Johnson, 2019). Pleasure is a description of the affective quality of the reading engagements characterised by their intensity (e.g. how much enjoyment of reading occurs in reading engagements). Wellbeing in our study is multi-dimensional, influenced by holistic models of wellbeing appropriate to an Aotearoa New Zealand context, such as te whare tapa whā (Durie, 1998) or fonofale (Pulotu-Endemann, 2009), to integrate the physical world with other facets of existence including, in our study, the emotional and social realms.

While the study aims to broadly understand relationships between wellbeing and reading for pleasure in Aotearoa New Zealand, focusing upon wellbeing during the COVID-19 pandemic is an opportunity to observe children's resilience and wellbeing under conditions where many people were affected by uncertainty and instability (O'Brien et al., 2021). The lockdowns were also a public health measure during which many people's attention was directed towards their own and others' health and wellbeing. We consider whether reading for pleasure before and during the pandemic may have affected children's wellbeing and use the results to reflect with young people informants on the significance of these findings for understanding of the current wellbeing of children in Aotearoa New Zealand.

This mixed-methods study examines relationships between reading for pleasure and wellbeing in two different ways. First, it analyses secondary quantitative and qualitative data from the Growing Up in New Zealand (GUINZ) study. Second, we develop nuanced insights about the GUINZ data and findings through conversations during focus groups with young people.

## Aim

To examine relationships between reading for pleasure and children's wellbeing in Aotearoa New Zealand.

## Objectives

To investigate whether children's reading affect prior to the COVID-19 pandemic may have influenced children's wellbeing during the pandemic.

To investigate whether reading affect may be a protective factor for children's wellbeing.

## Research questions

- What are the relationships between children's reading affect prior to the COVID-19 pandemic and their wellbeing during the COVID-19 pandemic?
- Was reading books with others influential on children's wellbeing during the pandemic?
- How are relationships between reading for pleasure and wellbeing during the COVID-19 pandemic relevant to the wider wellbeing of children and young people in Aotearoa New Zealand?

## Methodology

Our approach is transdisciplinary and draws upon cognitive science, social science, education, and statistical expertise aligned within an interpretivist research paradigm. We have undertaken exploratory statistical analyses and some regression modelling of secondary quantitative data selected from the Growing Up in New Zealand (GUINZ) study dataset. These include wellbeing variables collected from 11-year-old (11y) children during the COVID-19 pandemic and reading affect variables and covariates collected when the GUINZ child participants were 9 months (9m), 2 years (2y), 6 years (6y), 8 years (8y) and 11 years old. Qualitative comments from the GUINZ COVID-19 Lockdown Survey of 11y children were also interpreted.

Participatory methods were employed to include the perspectives of young people (who were around 11 years of age), library experts, Māori educators, statisticians and reading experts in our methods and findings. Through dialogue with informants and within the team we interpret results through a socio-material/psycho-social lens, based on the assumption that engagements between people, and between people and different "things" (material or conceptual

objects), at different levels of proximity (culture/society, community, home and whānau, self) influence and shape reading behaviours and wellbeing. These engagements have affective qualities that can be felt and described. A summary of the research design can be found in Table 19 (see appendix).

## Methods

### Secondary Dataset

Secondary data for the study comes from the 5,756 children in the GUINZ study and the smaller cohort (42% of the total: n=2,421) that completed the COVID-19 wellbeing survey. The GUINZ study aims to be representative of the ethnic and socio-economic make-up of the New Zealand population. However, in the COVID-19 wellbeing survey a higher response rate "was observed for girls, and children with older and more educated mothers" and a lower response rate was observed for "Māori, Pacific and Asian children, and children living in rural areas" (Walker, Dubey, Bergquist et al., 2021, p.3), which reflects that the online survey enabled participation for some groups better than others. Our results were also affected by response rates in earlier data collection waves, for example, in our dataset n=155 COVID-19 survey participants did not return responses on reading enjoyment and reading frequency which were variables we had previously examined from the eight-year data collection wave (Boyask, May, Milne et al., 2022).

A limitation of secondary data use is that researchers inherit the priorities of other researchers. Qualitative evaluation of our GUINZ data analysis through participatory methods is an opportunity to reprioritise the questions used in the original survey. Discussion of the results from statistical analyses ensures that the interpretations of findings and their future use in policy and practice are guided by the interests of those whom they concern.

### Exploratory Statistical Analysis

A process of exploratory analysis was followed to look for patterns in the GUINZ data and identify variables for further investigation that could answer our research questions. Outcome (wellbeing) and predictor (reading affect) variables as well as potential confounders (covariates) from the GUINZ dataset were selected. Other studies which have shown reading for pleasure as associated with lower levels of emotional problems

and mental wellbeing (Mak & Fancourt, 2020; Sun et al. 2023) informed our selection of reading affect variables as predictors of wellbeing outcomes.

Tools used included frequency and contingency tables, conversion of multiple response categories into binary, mosaic plots, chi-square testing, and Fisher’s exact tests.

Exploratory outcome variables

Self-reported variables provide a multi-faceted depiction of children’s wellbeing from the COVID-19 Wellbeing Survey at 11y (Table 14). The initial wellbeing variables selected provide insights into children’s perception of their overall health, sense of security and safety, social connectedness, financial concern, depression, and anxiety.

Exploratory predictor variables

Variables are representing different facets of reading affect from throughout the data collection waves (Table 15). Variables come from mother, partner, child proxy (0–8y) and child (8y).

Covariates

Table 18 (see appendix) summarises the covariates. We selected variables that may be informative about three of the main social influences on children’s development: socio-economic position of their family (household income at 8y), gender identity (children’s self-reported gender 8y) and standard classifications of ethnicity (self-reported by children 8y).

Focus Groups

Following the initial exploratory stage of statistical analysis and before the regression modelling, focus groups were convened to help us in different ways.

Two focus groups were made up of 15 participants in total, 11 female and 4 male. Demographic data was not collected as part of this study; however, participants were predominantly New Zealand European/Pākeha with a few participants of Indian and Asian heritage. All were in their 7th and 8th year of schooling, and so of a similar age to the GUiNZ sample at the time of the COVID survey.

Of the 15 participants, 13 identified as readers, while two indicated they did not enjoy reading and it was not something they chose to do. Socioeconomic data was not collected for participants, but the school the participants attend has an equity index number of 406 which means that, overall, students at this school face few barriers to achievement (Education Counts, 2024).

Process

We began by asking three questions used in the GUiNZ study itself as they are open to interpretation. Through asking those questions of focus groups, we explored their interpretations of the questions, thereby informing our interpretations of the GUiNZ data. The discussion was then guided by the outcomes of the exploratory analysis to inform the regression modelling. The aim was to provide a richer view of the relationships and enable better decisions to be made about which variables to include in the regression modelling and consider results in ways that are informative and useful rather than judgemental.

An initial thematic analysis of the focus group data followed the approach outlined by Braun and Clark (2006). This common approach (Van Gaalen et al., 2021) consists of 6 steps: (1) familiarization with the data, (2) generating initial codes, (3) searching for themes, (4) reviewing themes, (5) defining and naming themes, (6) reporting. The coding scheme (see Appendix # for a full list of codes and descriptions) was developed by identifying six categories, or key themes, (Definitions of reading and readers, Affect, Acts of reading, Sociality, Wellbeing, and Non-readers) based on established knowledge of reading and our exploratory statistics, and refined from the focus group discussions. Each category was broken down into codes and then one or two levels of modifiers where the data allowed for more fine-grained distinctions. Most of the focus group participants identified as readers although two identified themselves as non-readers. Owing to the subsequent disparity in data quantity between responses from readers and non-readers, all non-reader responses were placed into one code. Some of these were from the non-readers in the groups, and others from readers talking about siblings and others who are non-readers.

Multiple Regression Modelling Statistical Analysis

Following the focus groups, we intended to progress from exploring the associations between reading affect and wellbeing to see whether reading with others was predictive of better wellbeing during the pandemic. We estimated some regression models, choosing wellbeing variables that had statistical significance in the exploratory analysis and/or fit our theory that reading enjoyment and reading with other people may be influential on wellbeing. The focus groups also informed these selections; however, the focus group results had made us wary of the accuracy

of the only reading affect variable from the lockdown period, and this caution proved well-founded through the production of results. Consequently, we also did some modelling with two earlier reading affect variables, mothers reporting on their children’s reading enjoyment at 8y and mothers reporting frequency of reading with their 2y child. These two variables were selected because both early reading and reading enjoyment have in other studies been shown to have effects on later reading (Meissel et al., 2019; Sun et al, 2023).

Table 1: Outcome, predictor, and covariates for regression modelling of children’s reading affect during the lockdown

	Variable	Description	Measures
Outcome wellbeing variables			
General Health	QOL11_Y11LDC	How would you say your health is right now?	1 Fair/poor 2 Good 3 Very good 4 Excellent  Derived from GUiNZ variable QOL11_Y11LDC and reversed for modelling.
Positive Experiences	Positive Childhood Experiences score 11y	Combined score calculated from Q: How often during lockdown have you: <ul style="list-style-type: none"><li>Felt able to talk to someone about your feelings</li><li>Felt your family supported you in this time</li><li>Participated in community activities within your bubble (e.g. teddy bear hunt, Easter egg hunt, online church/mosque activities etc, online arts or cultural events e.g ballet, theatre, Waiata)</li><li>Felt connected to school/kura</li><li>Felt able to keep in touch with friends</li><li>Felt safe and protected in your home</li></ul>	Six questions measured on a scale: 0 Never 1 Almost Never 2 Sometimes 3 Often 4 Always 99 I don’t know  The positive experiences score is calculated as the sum of responses “Often” or “Always”.
Depression Score	DEPRESS_SCORE_Y11LDC	The validated 10-item short form of the Center for Epidemiological Studies Depression Scale (CES-D-10) (Weissman, 1980).	Ten questions measured on a scale: 1 Not At All 2 A Little 3 Some 4 A Lot  The score is calculated as the sum of responses over 10.



Table 1: Outcome, predictor, and covariates for regression modelling of children’s reading affect during the lockdown continued

	Variable	Description	Measures
Predictor reading affect variables			
Reading affect during lockdown 11y	PC5_BBL_Y11LDC	How often do you do the following activities with the people in your bubble during the lockdown? – Reading books together in my bubble	1 Never/Almost never 2 Once a week 3 Several times a week 4 Once a day 5 Several times a day 99 I don't know
Reading enjoyment 8y	AE93_Y8CM	In general, how much does {NAME} enjoy reading for pleasure? (Choose one only)	1 Very much enjoys 2 Somewhat enjoys 3 Neither enjoys nor dislikes 4 Somewhat dislikes 5 Strongly dislikes 98 Prefer not to say 99 Don't Know Reversed for modelling.
Reading together 2y	pc5_y2m	How often do you read books with your [child/children]?	1 Seldom Or Never 2 Once A Week 3 Several Times A Week 4 Once A Day 5 Several Times A Day 98 Ref 99 DK
Covariates			
Household income 8y	HHING_Y8M	In the last 12 months what was your household's total income, before tax or anything else was taken out of it? – categorised	1 \$1 – \$20,000 2 \$20,001 – \$30,000 3 \$30,001 – \$50,000 4 \$50,001 – \$70,000 5 \$70,001 – \$100,000 6 \$100,001 – \$150,000 7 \$151,000 or more 98 Prefer not to say 99 Don't know 999 Not applicable
European self-reported prioritised ethnicity 8y	ETH5_E_Y8C	Thinking about your ethnicity or culture, are you...? – New Zealand European	0 No 1 Yes 98 Don't know / Refused

We present some regression findings in the report. The outcome and covariates were refined through the exploratory analysis, with only one possible predictor variable for reading affect from the wellbeing lockdown survey dataset. Note that in the regression modelling we selected as a covariate for the regression only European ethnicity from the standardised categories of ethnicity (Asian, European, Māori, Pacific, Other) in light of the results from the exploratory analysis that showed European ethnicity had a different effect from the other categories (see commentary on Table 4 and Figure 8). The categorical variables General Health and Positive Childhood Experiences score were examined first by checking

the direction of the variables (and reversing General Health) and then through ordinal logistic regression modelling, and then checking the model fit through Nagelkerke’s R-squared, likelihood ratio test, and Lipsitz test. The accuracy of the model was then calculated. Finally, the proportional odds assumption was tested using the Brant test.

Since the depression and anxiety scores were derived from a clinical measure, they may have been more objective than the General Health outcome. We attempted to fit each of these to a generalised linear mixed regression model.

Qualitative comments

Some questions in the COVID-19 Wellbeing Survey elicited qualitative comments. We have selected and analysed children’s comments that mention reading affect or objects from questions on the best, worst, and most worrying things about lockdown, anticipation for after lockdown, and anything else about the experience of lockdown.

Interpretive Analysis and Theory Building

Analysis occurred throughout the study to inform different phases of research. The research team has an established protocol for interpreting data that is consistent with a transdisciplinary interpretive methodology: 1) develop a data summary, 2) present

summaries for discussion by the research team centred on interpretation and synthesis of emergent findings, 3) share emergent findings with stakeholders/ participants to contextualise anwwwd identify those of most relevance to the communities they represent. In addition to the focus groups, findings are shared with our partnership group of critical friends with expertise in statistics, education of Māori students, and library engagement with schools.

Theory building occurs towards the end of the project. Through collaborative writing, we reflect on research findings in the context of our prior research, wider literature on reading, and theoretical frameworks to help explain our findings.

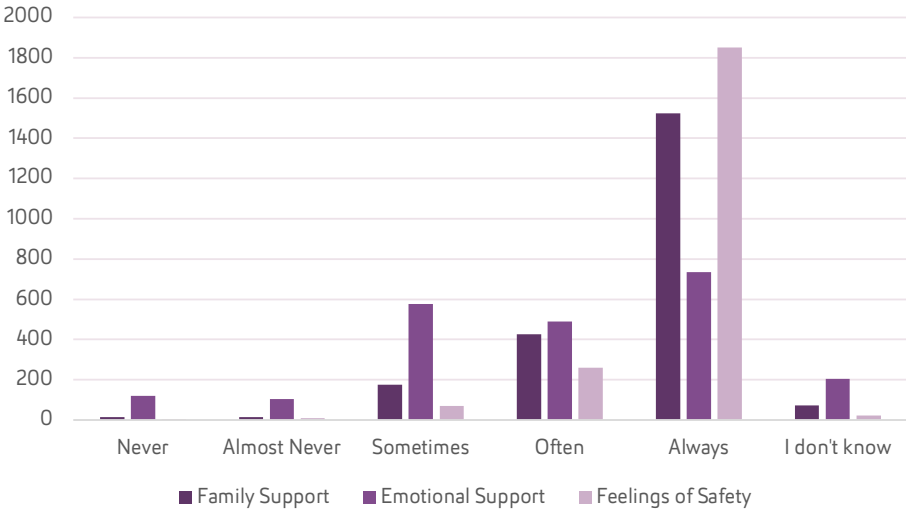


Figure 1: Regularity of feeling supported and safe during lockdown

Results

Health and Wellbeing Outcomes

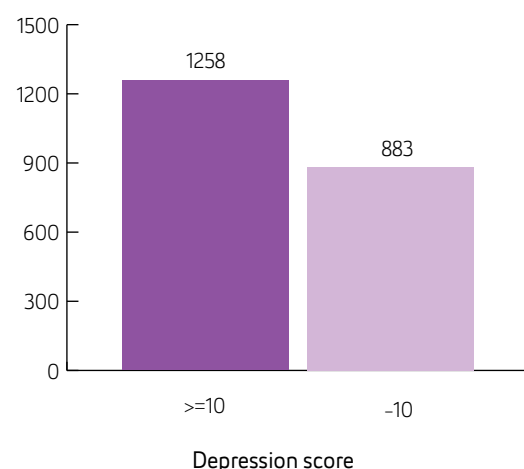
Most of the children who took part in the COVID-19 Wellbeing survey reported that their general health was excellent (n=1145), very good (n=709) or good (n=304) with only 61 children reporting their general health was fair or less good. Most of the children reported that they felt supported and safe during lockdown, although there was wider variance in how often they felt able to talk to someone about their feelings (Figure 1).

There was also greater variation when children were asked how often they worried about how much money their family had, with only 1152 having no money worries at all, and 763 children worried sometimes or often, and 84 children always worried.

A GUiNZ report on the Wellbeing Survey (Walker et al., 2021) cited international research that had concluded placing children in isolation or quarantine may significantly affect psychological health. The pandemic response in New Zealand was different from other countries, with strong control measures early on, and therefore may have different effects. While the survey was completed by the children at a distance, some clinical measures were included in the survey to more objective results. Children were asked to complete the Centre for Epidemiological studies Depression Scale for Children (CES-D 10) and PROMIS paediatric Anxiety symptoms scale 10-item short form for measuring anxiety (PROMIS). While neither instrument has been validated for use with a cohort with these demographic characteristics, they give an indication of the children’s wellbeing from a clinical perspective. A higher score of greater than or equal to 10 on CES-D 10 may suggest clinically significant depressive symptoms.

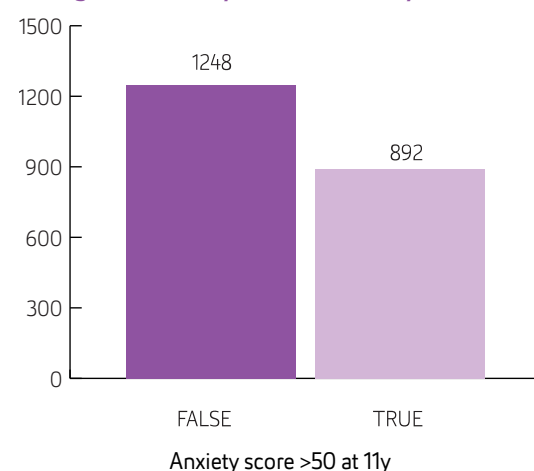


Figure 2: Depression score as a binary variable



A score on the PROMIS measure of less than or equal to 50 is used to suggest no anxiety, 51-55 indicates mild symptoms of anxiety, 56-65 indicates moderate symptoms of anxiety and scores greater than 66 indicate severe symptoms of anxiety. While they may elicit more objective information, again this scale has not been validated for the population in this study, and the results can provide only an indication that clinically significant anxiety symptoms may be present.

Figure 3: Anxiety score as a binary variable



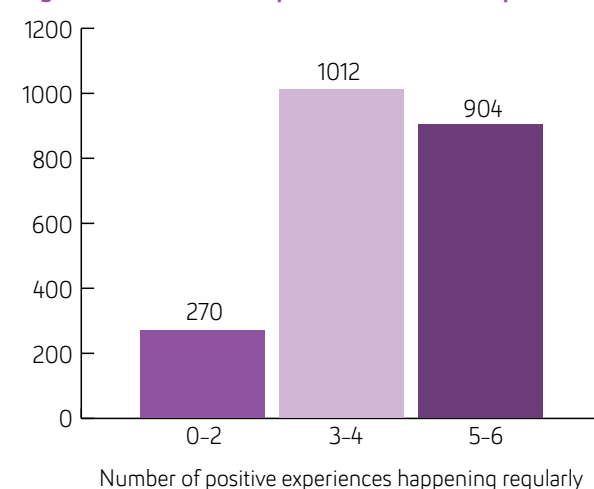
Children were asked if they felt connected to friends and family during lockdown. Children who felt more connected were in contact with friends a few times a week or every day AND in contact with family a few times a week or every day. Moderately connected if they were in contact with friends a few times a week or every day OR in contact with family a few times a week or every day. And a little or not connected if they were in contact with friends weekly or less AND in contact with family weekly or less.

Table 2: Connectedness during lockdown

w	Freq
More connected	899
Moderately connected	680
Less connected	104

An overall Positive Childhood Experiences Score was derived from six questions on: family support, community participation, school connection, contact with friends, feelings of safety, and having someone to share their feelings with. The score was derived by adding together the frequency of an "Often" or "Always" response to these questions (Table 1).

Figure 4: Occurrence of positive childhood experiences



### Reading Affect

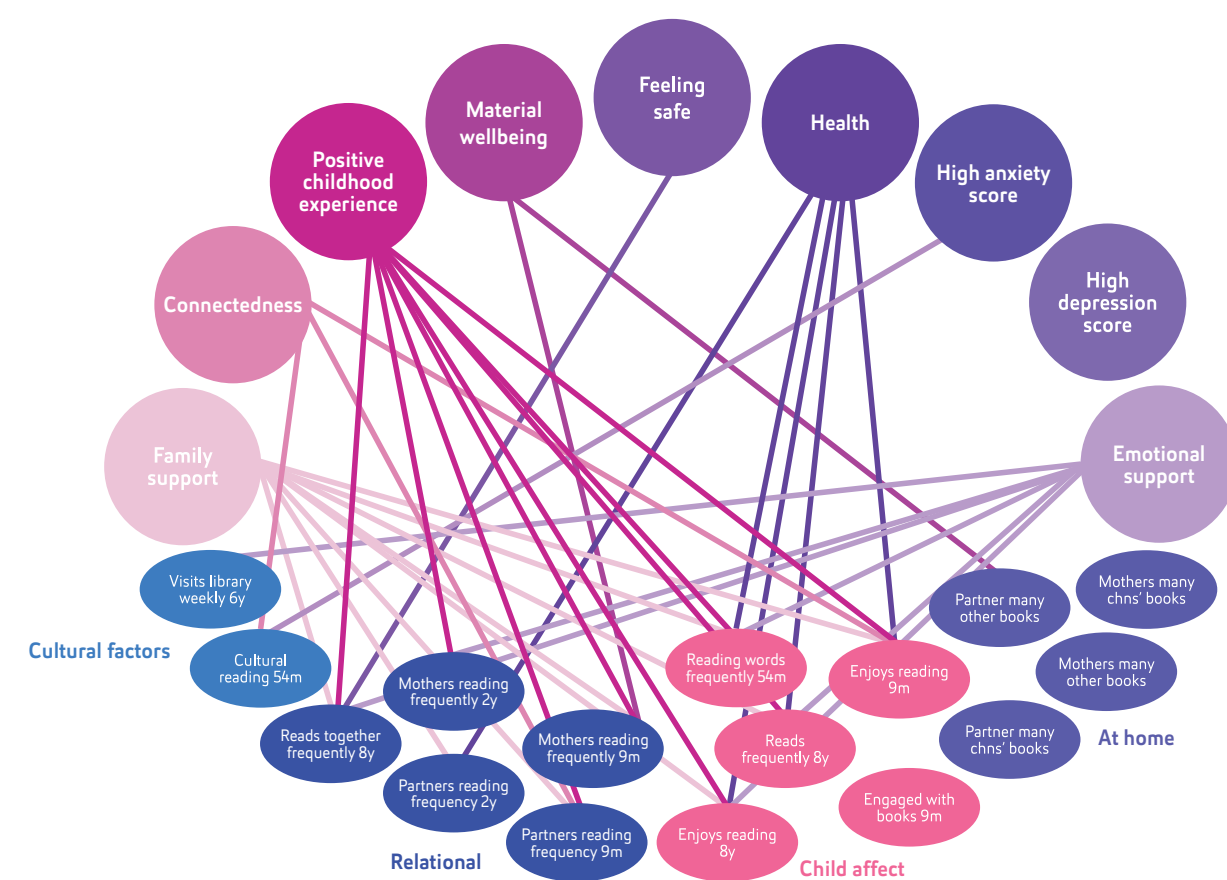
Reading affect variables selected from the GUiNZ dataset represent different aspects of the experience of reading. The variables selected and their groupings arise from our theoretical model of the child as self that is embedded within affective relationships of reading (Boyask, May et al, 2021; Boyask, Jackson et al, 2024). The reading affect variables have been grouped to include:

- Relational (reading with other people)
- Child affect (the intensity of children's engagements with reading)
- Cultural factors (engagement with reading objects within a broader culture)
- At home (engagement with reading objects at home)

Figure 5 shows significant associations between wellbeing and reading affect variables identified through Fisher's exact test. Full results can be found in the odds ratio Tables 21-29 in the appendix. From this analysis we conclude that positive affective experiences of reading have some significant associations with the children's wellbeing indicators being considered. The odds ratios with a significant effect fell between 2.18 and 1.21. Even though the connecting lines represent increased odds between reading affect and wellbeing, the size of the ratios and their confidence intervals indicate these are moderate in effect. From this analysis we also do not understand whether these associations stand alone, or whether

they are dependent upon other factors. Exploratory analysis of these variables also revealed the extent of missing data (Table 16), which led to refinement of the variables included in further multivariate analysis. Partner response variables were discounted for linear regression because they all had percentages of NA responses over 20%, and there was high or moderate correlation when they were examined as ordinal data in a polychoric correlation matrix, checking for multicollinearity (Table 17). Reading for enjoyment and reading frequency were also highly correlated so we chose to include only reading enjoyment in multivariate regression modelling.

Figure 5: Exploratory analysis of wellbeing during and reading affect prior to the pandemic.



### Legend

- Circle: wellbeing variables
- Oval: reading affect variables (cultural, relational, child and at home)
- Connecting line: increased odds
- No line: no significant association
- NB: there were no significant relationships of decreased odds



Socioeconomics, Gender, and Ethnicity as Covariates

The reading affect variables have been examined in the light of the social demographic characteristics of the cohort. We have selected variables that represent commonly reported effects in reading studies: socio-economic factors, gender, and ethnicity. The selected variables come from the children’s own identification at 8y for ethnicity and gender, and socio-economic factors examined include area level deprivation at 8y using the New Zealand Deprivation Index and household income at 8y.

Table 3: Frequency of self-reported gender 8y

Gender identity	Freq
Boy	1,840
Mostly a boy	497
Somewhere in the middle	670
Mostly a girl	553
Girl	1,161
Don't know	121

Figure 6: Reading enjoyment 8y by gender 8y

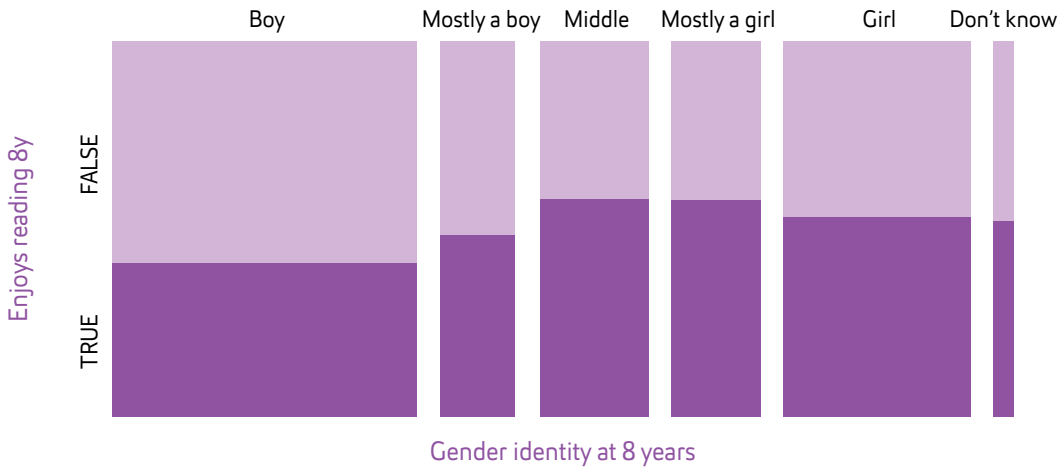
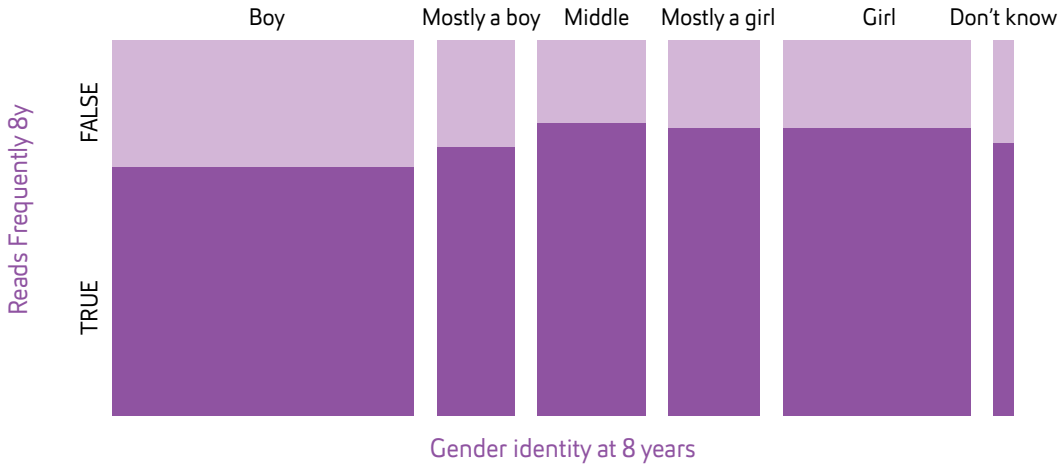


Figure 7: Reading frequency 8y and gender identity at 8y



Overall, gender seems not to be especially related to reading affect, especially for younger children (0–6y). Results across gender are fairly even, and most p-values show no evidence of significance in these associations or differences between groups (Table 30). Yet as the children age some gender differences become apparent. Children who self-reported as

boy were associated less with enjoying reading at 8y (reported by child proxy in the 8y data collection wave) than those in the middle, mostly a girl or girl (p-value<2.2e-16). This trend is repeated for reading frequency, although with less prominent differences (p-value=1.76e-11).

Associations between frequency of reading and reading enjoyment and ethnicity for 8y children are the reverse of gender, with relative commonality of enjoyment and greater variation in frequency of reading across children’s self-reported prioritised ethnicities.

Table 4: Results of self-reported prioritised ethnicity 8y associated with reading affect variables

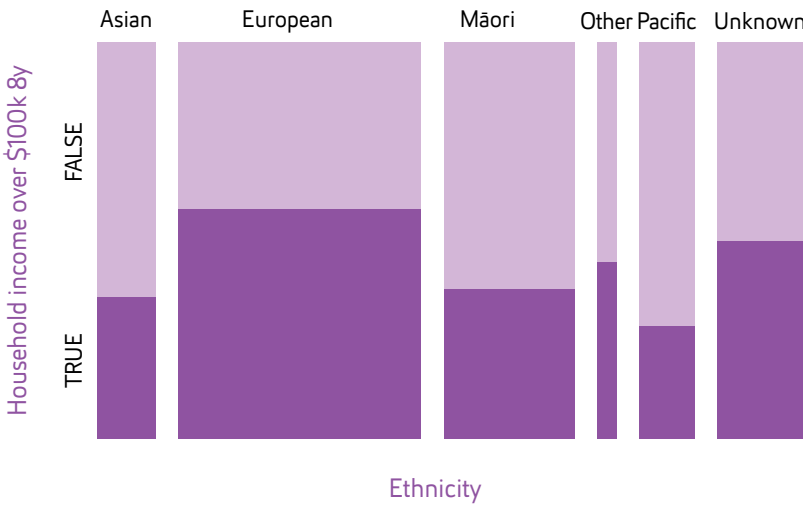
Reading Affect	Asian	European	Māori	Pacific	Other
Enjoys reading 8y	<b>55%</b>	54%	42%	44%	52%
Reads frequently 8y	73%	<b>82%</b>	63%	59%	79%
Reads together with mother 8y	<b>57%</b>	<b>57%</b>	45%	52%	<b>57%</b>
Reading words frequently 5y	83%	<b>94%</b>	79%	75%	90%
Cultural reading 5y	<b>47%</b>	20%	34%	35%	37%
Mothers reading frequently 2y	77%	<b>95%</b>	84%	77%	86%
Partners reading frequently 2y	65%	<b>88%</b>	71%	65%	70%
Mothers reading frequently 9m	68%	<b>82%</b>	72%	75%	70%
Partners reading frequently 9m	40%	<b>50%</b>	42%	47%	44%
Enjoys reading 9m	41%	<b>55%</b>	44%	41%	<b>55%</b>
Engaged with books 9m	<b>24%</b>	19%	18%	23%	18%
Mothers many children’s books	39%	<b>76%</b>	61%	41%	57%
Mothers many other books	40%	<b>70%</b>	47%	36%	54%
Partners many children’s books	36%	<b>71%</b>	57%	34%	54%

Note: Other here is a combination of the Middle Eastern / Latin American / African (MELAA) category and other ethnicities, a very varied group. Shaded cell is highest percentage for that variable.

Looking across the results, we see that children categorised as European differ in the statistics on their engagement with reading compared with other ethnicities. Books and reading appear to be more consistently and disproportionately embedded in European homes. There is more variation across the other categories of ethnicity. While there are lower numbers of books in Asian homes, enjoyment of

reading is relatively high for Asian children and there is more reading about cultural identity in Asian, Māori and Pacific homes than European. There is also relative commonality in engagement with books or magazines (How often during the last week did the baby look at pictures in books and/or magazines for 5 minutes or longer at a time?) at 9 months (9m) across ethnicities, indicating variation may occur at later stages in children’s development.

Figure 8: Prioritised self-reported ethnicity 8y by Household income over \$100k per year 8y





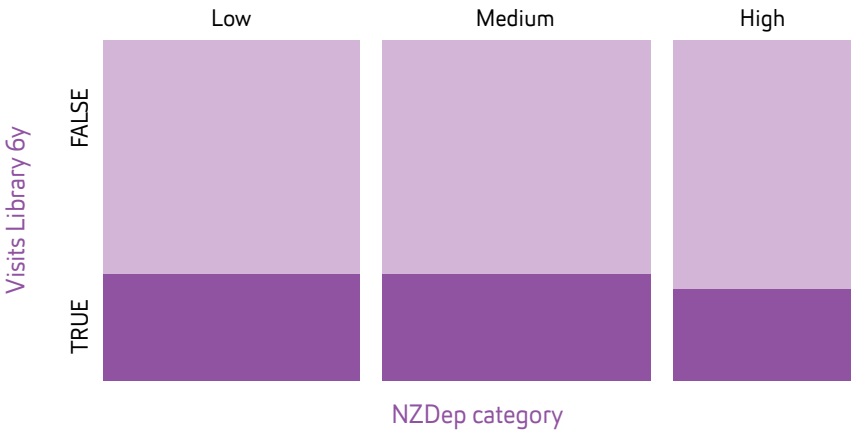
About half of the children lived in families with a total household income of over \$100k per year at 8y, so this is a sensible split for this variable into higher and lower income households. When this is examined in relation to ethnicity, it is evident that this social group is also the most affluent.

There is a discernible trend of children living in areas of less deprivation enjoying and reading more often and having more access to books at home. An exception to the general trend is mothers reading to their children at 5y about their ethnicity or culture, where this is more common in areas of higher deprivation. There is also less variation between the deprivation categories for visiting the library weekly.

Table 5: Frequency of 8y children living in low, medium and high deprivation index categories

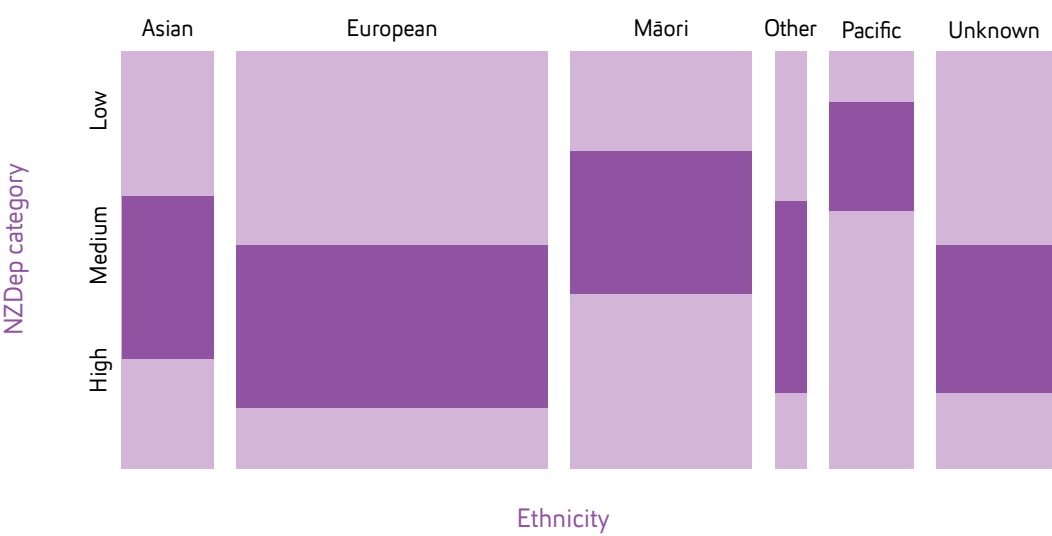
NZ Deprivation Index	
Category	Freq
Low	1774
Medium	1869
High	1317

Figure 9: Mothers report on children 6y visits to library compared with area level deprivation at 8y



The area deprivation levels seen in association with ethnicity follows a similar pattern to ethnicity and household income, with European ethnicity standing out as most closely associated with low levels of deprivation.

Figure 10: Self-reported prioritised ethnicity 8y by area deprivation levels 8y



With high socio-economic and European ethnicity effects evident in our data we used these as factors to refine our analyses of relationships between reading affect and wellbeing. Several ordinal logistic regression models were developed to see if we could understand better how European ethnicity and socio-economic advantages may be influencing wellbeing outcomes and if their effects are stronger than reading affect.

Table 6: Results table of proportional odds logistic regression of general health, reading affect and covariates

		Coefficients	Odds ratio	Lower CI	Upper CI	p-value	
General Health 11y	Enjoys reading 8y	0.28019	1.32339	0.85294	2.02858	0.20304	R2 <sup>1</sup> 0.03037
	Reading together 2y	<b>0.54188</b>	<b>1.71924</b>	<b>1.13126</b>	<b>2.60619</b>	<b>0.01073</b>	LogLik.diff= -23.016 p.value= 0.00005
	Household Income 8y	-0.30364	-0.30364	0.73812	0.43898	1.21249	Lipsitz LR Stat= 11.314 df=9 p-value= 0.2548
	European Ethnicity 8y	0.06133	1.06325	0.92296	1.22422	0.39456	Accuracy= 51.6% Omnibus Brant Chi-sq= 63.155 p-values <sup>2</sup> = 0.0004

Bold indicates significant associations where the confidence interval does not include 1.

<sup>1</sup> R2 is Nagelkerke's pseudo-r-squared

<sup>2</sup> P-values above 0.05 on Omnibus plus at least one other variable for proportional odds assumption to hold.

Wellbeing outcomes considered were children's self-reported general health, and symptoms of depression and anxiety (measures and how they were derived is reported in Table 1).

Enjoyment of reading at 8y and Reading together at 2y were selected as predictor variables to fit our theory of reading (where reading affect can be characterised as affective engagements with reading objects in contexts of sociality) and after checking for multicollinearity (Table 17) to ensure we were not selecting predictor variables with a high correlation that may indicate interaction between each other rather than with the independent outcome variable.

Table 6 shows the logistic regression that sought to ascertain the associations between increased general health and increased enjoyment of reading 8y (5 levels), reading together with mothers at 2y (5 levels), household income (7 levels), as well as consider the effects of European ethnicity that we could see in our exploratory statistics.

While there are no significant results in this estimation for reading enjoyment, with all confidence intervals including 1, on a linear model for each increase in the level of reading together at 2y (where the levels are seldom or never, once a week, several times a week, once a day or several times a day) we might expect about a one and a half increase in odds of children reporting a higher level of general health, holding all other variables constant. This suggests that more

frequent reading together at 2y is a stronger predictor of perceived general health at 11y than household income 8y and European Ethnicity 8y.

We also modelled these predictor variables against increased anxiety and depression (Table 20). However, there were no significant results.

Qualitative analysis of GUINZ Wellbeing Survey

In the COVID-19 survey children were asked to comment on some of their experiences of lockdown. There were 53 comments related to reading experiences from 47 children. Most of the children who mentioned reading in the survey were reported to enjoy it at earlier points in their lifetime (n=45). One child commented that "discovering how much I like to read" was one of the best things about lockdown. Some mentioned that they found reading an enjoyable experience. There were 17 comments indicating that it was something they were doing more often during the lockdown, though access to reading materials was mentioned as a constraint. There were 11 comments about libraries, with most of the children expressing concern that they could not go to the library during lockdown and that they looked forward to libraries opening again: "My books are about to run out so I'm looking forward to the library being open again", and "Seeing my friends again, knowing its safe and libraries opening".



There were not many comments that linked reading to how they were feeling during the pandemic. One child lamented “*being bored because I couldn’t get books to read*”, and another thought one of the best things about lockdown was “*realising how bad pandemics were after reading lots of apocalypse books, e.g. The Maze Runner*”.

One comment explicitly linked the participant’s reading activity to someone else, claiming “*book time with mum*” was one of the best things about lockdown. Another mentioned they had “*really enjoyed my reading on my older sister’s Kindle*”. Many of the comments that included reading as one of the best things about lockdown also mention spending time with family members.

Reading was represented in 19 of the responses as one in a list of three or more of the best things about lockdown. In the most complex examples reading sits alongside time with family members, physical activities, creating and purposeful play activity. For example:

- Food, games, movies, card games, sleep, reading, Mau rākau, family time, homework/schoolwork, talking to friends online.
- Spending more time with my mum. Riding my bike. Learning to cook and bake. Being proud of our achievements. Improving my maths with my mum. Reading lots of books.
- Learning to use Skype, Messenger Kids, getting new books, reading more, starting a long story, becoming penpals with someone, being home with my family.
- Building a go cart with dad, reading, colouring and art, baking, biking along the bike path, making an obstacle course, making my own board game, scavenger hunts.
- It’s been like one big weekend. We have been going for lots more beach walks, playing a lot of guitar, baking/cooking, writing, playing with my kittens, playing board games, science experiments, going boogie boarding [in level 3], video games, reading, Lego, hanging out with my family, and digging up tyres in my garden.

There were also examples of reading as one of several literacy practices. This comment demonstrates a multi-modal approach to language:

- I have been learning French and I have had the time to read a lot more because I love reading and I have written some stories for fun.

Focus groups

Interpretation of GUiNZ Questions

Participants in the focus groups were given three questions from the GUiNZ study to answer. After they responded, each question was then discussed with the focus group to reveal how they chose their answer. The first GUiNZ question discussed in the focus groups was from the COVID survey:

1. How often did you do the following activity with the people in your bubble during the lockdown? – Reading books together in my bubble
2. Over the past 12 months, thinking about a normal week, how often has {NAME} participated in the following extracurricular activities? – Reading for pleasure
3. In general, how much does {NAME} enjoy reading for pleasure?

The first GUiNZ question was of particular interest to the current study as the researchers were curious about how this question, particularly ‘together in my bubble’, was interpreted by respondents. Answers have informed the interpretation of the responses received to the question in the GUiNZ Lockdown Wellbeing Survey (question one above). Questions two and three were from the 8y data collection wave where answers were proxy reports by children’s mothers.

The focus group participants were asked how accurate their parents may have been when they were aged 8, also informing our interpretation of the GUiNZ data. While there was general agreement in the group that their parents were likely to underestimate the frequency of their reading now because of how much of it happens in private, they thought that their parents’ answers would have been accurate when the participants were aged 8 because of different family dynamics when they were younger. Participants felt their parents would answer accurately the level of enjoyment of reading both now and at 8y. These results suggest we can rely on the parental reports from the 8y data collection wave of the GUiNZ dataset.

The focus groups interpreted “reading together in my bubble” in two main ways. In some cases, it was interpreted as being about reading separately but with a social aspect, either as reading in the same physical space (“*Reading at the same time in the same general vicinity*”) or as talking about the books they have read (“*I think it was that like you read different books, but you discuss what you read in those books*”). The other interpretation was more literal, in that participants assumed the question referred to reading the same book together at the same time (“*thought it meant you were reading a book, so like one person was reading it out loud, for example, and then like people were listening*”).

Table 7: Focus group responses to GUiNZ questions

Question	Responses					
1	Several times a day	Once a day	Several times a week	Once a week	Never	Don’t know
	0	0	6	1	5	2
2	More than once per week	Once per week	Once per month	Once every 6 months	Once a year	Never
	13	1	0	0	0	1
3	Very much enjoys	Somewhat enjoys	Neither enjoys nor dislikes	Somewhat dislikes	Very much dislikes	Don’t know
	12	1	1	0	1	0

None of the participants thought the question asked how much reading they had done during lockdown. The second focus group discussed this explicitly, with one participant saying “*for me, I don’t really, like, read with my family, but I would definitely read a lot by myself. I would read in my room a lot*”. When considering the link between “*reading together in my bubble*” and wellbeing during COVID, it is important to consider the ways this question was interpreted and how that differs from reading more generally.

Reading for Pleasure and Children’s Experience of Lockdown

The following tables show the counts for each code and modifier. The counts for modifiers will not always total to the count for the initial code, since in some cases comments were more general and could not be refined further. In addition, there were multiple instances of comments by one participant agreed to by other group members through nodding etc, but without verbalising their agreement. The tables provide an indication of the topics of conversation, and relative amounts of consideration given to each area by the groups. In addition, it should be remembered that comments by the two non-readers were coded into a separate group, and so the following tables and results (apart from the last) relate to the participants that self-identified as readers.

Definitions of readers and reading

Many of the comments related to the intensity and depth of engagement with reading when discussing what makes a reader and what counts as reading. This was often connected to the effort or commitment required (“*Starting a book and reading till like a whole page maybe or finishing it all at once if you’re an intense reader*”, “actually comprehending”) and to enjoyment (“*Readers could be people who love reading*”) which was in turn related to choice (“*I’ll read in my free time but if you make it homework, I’m not gonna enjoy it*”). For most participants, “reading” was anything that involved engaging with written words but being “a reader” involved more than that.

Also of note was that participants did not define readers only by their reading (“*A reader can be whoever they want to be.*”) and readers are essentially ordinary people who also engage in the same activities (e.g. sports) as others who are not readers (“*Stereotypically, people may think that readers are nerds but like, yeah, readers are just people*”).

Table 8: Code counts for defining readers and reading

Definitions						
97						
Focus	Comprehension	Materials		Enjoyment	Complimentary acts	Other
8	15	43		23	14	3
	Processing	Parents	Personal			
	10	5	18			

Affect

The affect category is related to affective responses to the experience of reading. For example, “*Readers could be people who love reading*” was coded to “enjoyment” under definitions of readers, rather than to affect, while one participant talking about how they “*feel the good thing of reading a book*” was coded as an example of positive affect for book reading (as opposed to audiobooks). As these counts are for readers, it is not surprising that there are more positive codes than negative, but it does indicate that even those who enjoy reading a lot can experience negative affective responses to reading in some circumstances (“*But I guess it wouldn’t be so much with documents and things that you find because it’d be like, oh, got to read this*”).

Table 9: Code counts for affect

Affect	
9	
Positive	Negative
7	2

Acts of reading

This code relates to the form acts of reading take. These responses were coded to others being around, to where and when reading happened. While there were two instances of comments coded as reading together, it is important to note that in both cases this was about reading at the same time and place as someone else in their bubble, not reading together in terms of sharing a book or ideas because that is coded to sociality.

Most of the comments coded here related to the conditions under which participants did their reading. Of note, the act of reading was viewed as an individual activity, even when reading in the vicinity of others (“*You know when you’re on holiday and you’re by the pool and you can just read your book even though you might have someone else in the lounge that’s right next to you who’s also reading a book*”). Place and time were important, and there was a routine nature to reading for some (“*I usually read at night before I go to bed*”), while others took any chance to read (“*whenever I can find a book*”).

Table 10: Code counts for acts of reading

Acts of Reading		
21		
Together	Alone	Place & time
2	4	14
Shared	Separate	
0	2	

Sociality

Codes relating to sociality refer to the connections participants felt between themselves and others resulting from reading. Most comments in this category were coded as enhancing connections with others. These comments related to the conversations and connections stemming from reading such as sharing recommendations (“*My sister, most of the books I’ve read, she’s read, so if I’m stuck and I don’t have anything to read, I just ask her for some recommendations*”) and shared interests (“*It definitely helps if... like if you’re talking to anyone, it definitely helps if you have a topic that you both know*”) and not from the act of reading together itself. In one case, a participant identified their reading as a potential source of tension, in this case when her father thought she should be outside, and not sitting reading.

Table 11: Code counts for sociality

Sociality			
3			
with		alone	
5		1	
Together in time	Discussion of reading	Positive	Negative
0	2	0	1

Wellbeing

There was a relatively large number of comments coded as being connected to wellbeing. There was general agreement amongst the readers that reading was beneficial for their wellbeing, with many statements explicitly saying so, and others comparing how they coped during lockdown to how others they know who they identified as non-readers. The connections that reading facilitated with others were a part of that, but most of the comments coded to wellbeing directly related to something to do with the reading of books. Two main areas emerged; one is the relationship readers felt with the characters they read about. Some found it helpful to be able to read about people like themselves during lockdown

as they were not able to have personal contact with their peers during that time (“*I find that I read ones that are quite similar to me because it feels like your friend – you have a friend there who’s like quite similar and it’s comforting to feel like there’s someone else*”) and this was helpful for wellbeing. Others felt that reading about characters unlike themselves helped them to understand the people around them more and to be more empathetic as a result (“*I like when there’s like a variety of characters because it helps me see different perspectives*”). Another key aspect is that of absorption. For many in the focus groups, reading was a chance to ‘escape’ from the reality of lockdown through becoming absorbed in a book. Many of the

comments here related to a chance to “disconnect from the world” in some way (“*especially because like when you get absorbed in a good book, you can often like forget about what’s going on in your life or you get distracted*”).

Reading also supported wellbeing through secondary effects. Participants reported feeling better following reading, which had a positive impact on their social relationships and a subsequent impact on wellbeing (“*when I was reading a book and then I finished it, it made me feel better, and then like if someone would call me and see if I was okay, I felt more connected to them*”).

Table 12: Code counts for wellbeing

Wellbeing								
70								
EQ/ Empathy	Connections		Book related				General	
6	10		41				17	
	Enhanced WB	Not enhanced	Characters		Absorption		Books at home	Choice
	7	2	10		13		3	6
			Like me	Unlike me	Positive	Negative	Helpful	Not helpful
			5	3	9	2	1	2

Identifying as non-readers

There were 11 comments coded as being about non-readers. Some of these were from the two who identified themselves as non-readers in the focus groups, most of those were from one participant in the second group, and others were from participants who identified themselves as a reader but talked about siblings or others who they thought were not readers.

Unsurprisingly, reading was not perceived as helpful to wellbeing by these children. Their comments indicated that reading was not common in their households. (“*Reading did not like help me much over lockdown because I was in my house for six months, I really did not go out much, and for all that six months I never touched a book or read a book because there were no books in my vicinity or in my house.*”) While this was not considered a problem for this participant, the connection between wellbeing and reading for those considered “non-readers” was also commented on by other participants in relation to others in their social and familial circle (“*I was fine throughout most of lockdown and then my brother who’s not interested in reading at all was panicking and anxious like the whole time*”).

Participants considered this negative impact of not reading to be a result of an inverse to the positive impact of the escape aspect of reading resulting from being overly focused on the pandemic (“*he just watched YouTube the whole time and half the stuff on YouTube would kind of just be about Covid*”).

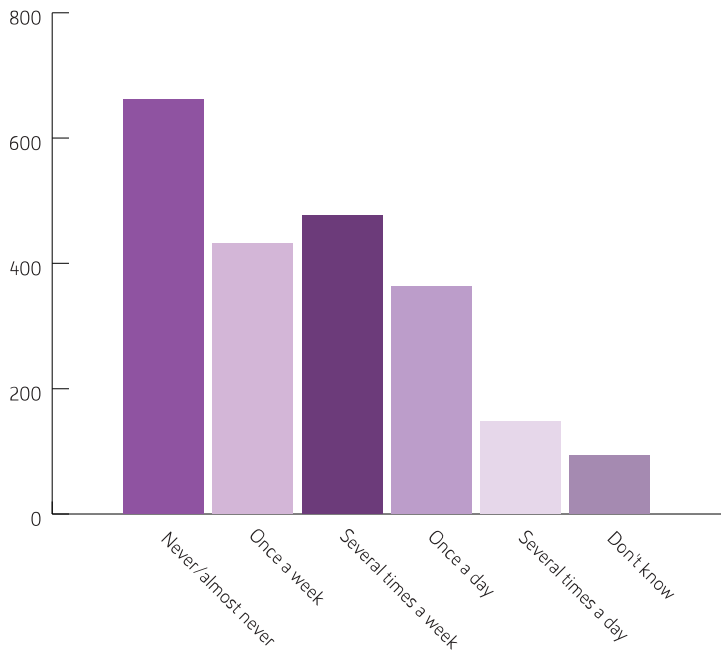




Reading books with others during lockdown and children’s wellbeing

The COVID-19 survey asked children how often they read books together in their lockdown bubble.

Figure 11: Frequency of reading books together during lockdown



While aggregating these figures shows that around half (47.5%) of the participants were reading books together in their bubbles several times a week or more, notably the biggest percentage within a single category was 31.8% of participants who never or almost never read together. Following the focus groups, further proportional odds logistic regression was used to investigate relationships between wellbeing outcomes and reading books together in lockdown. We had originally set out to consider whether reading together during lockdown was predictive of how children felt about their health and wellbeing. We followed the approach of the earlier exploratory analyses as well as undertaking further logistic regression modelling.

Table 31 (see appendix) charts the proportional odds ratios for the nine wellbeing variables against the only reading affect variable from the lockdown survey, frequency of reading books together in my bubble (reading together 11y). From the focus group discussions, this could mean either reading separately but with a social aspect (whether that was reading separately in the same room or discussing something read separately), or the literal meaning of reading the same book together. It does not account for the full amount of book reading done during lockdown.

The odds ratios in Table 31 show positive associations between reading together during lockdown and four wellbeing variables: regular family support (OR 1.84, 95% CI (1.40, 2.45)), positive experiences score (OR 1.40, 95%

CI (1.19, 1.65)), regular emotional support (OR 1.31, 95% CI (1.10, 1.56)), and connectedness (OR 1.21, 95% CI (1.00, 1.46)). There was a significant negative association with a high depression score (OR 0.78, 95% CI (0.66, 0.94)). There was no evidence of an association with regularly feels safe, very good health, no money worries, or a high anxiety score.

Table 13 indicates the outcome of examining the reading together 11y variable as a predictor of general health and combined positive experiences score in ordinal logistic regression models alongside household income 8y and European ethnicity 8y.

The likelihood ratio test was not conclusive as the p-values of log-likelihood for both models are low, and so it is not clear if the models fit the data better than a null model (the model without the predictor variables). However, the proportional odds ratio assumption holds in both cases. In a regression model that estimates the effect on General Health 11y, European ethnicity has a marginally stronger predictive association when compared with Reading Together 11y and Household Income 8y. The odds of European ethnicity are raised further in the estimation of the effects on the combined positive experiences score. It is interesting to note that the GUiNZ report of the Wellbeing Survey (GUiNZ, 2021) indicated that Pasifika had significantly lower anxiety scores than European children during lockdown, and that Māori and Pasifika children had a significant decrease in depression scores over time, compared with European children.

Table 13: Ordinal logistic regression modelling for predicting effects of reading together 11y, ethnicity and household income on wellbeing outcomes

		Odds ratio	Lower CI	Upper CI	p-value	R <sup>2</sup> <sup>1</sup>	LogLik. diff	Lipsitz	Accuracy	Brant p-values <sup>2</sup>
General health 11y	Reading together 11y	1.18	0.982	1.42	0.077	0.007	-6.132 p-value = 0.007	LR Stat = 8.93 df = 9 p-value = 0.443	51.7%	Omnibus = 5.020
	Household income 8y	1.19	0.991	1.42	0.063					0.917
	European ethnicity 8y	1.15	1.01	1.31	0.032					2.495
Positive Experiences Score 11y	Reading together 11y	0.99	0.989	0.998	0.002	0.010	-9.773 p-value= 0.000	LR Stat = 54.32 df = 9 p-value = 1.637e-08	27.1%	7.11
	Household income 8y	0.99	0.995	1.00	0.288					4.78
	European ethnicity 8y	<b>1.27</b>	<b>1.08</b>	<b>1.50</b>	<b>0.004</b>					4.89

Bold indicates significant associations where the confidence interval does not include 1.  
<sup>1</sup> R<sup>2</sup> is Nagelkerke’s pseudo-r-squared  
<sup>2</sup> P-values above 0.05 on Omnibus plus at least one other variable for proportional odds assumption to hold

Discussion

Children’s reading at home during lockdown

Knowledge of the earlier reading of GUiNZ child participants comes mainly from the children’s mothers. Mothers indicated that most children at 8y read more than once a week and about half enjoyed reading very much. We can rely on these data as the focus group participants think their mothers had a reasonable grasp of how much reading they were doing at that age. However, the relationship between mother and child changes as they get older. The focus group participants thought their mothers would now vastly underestimate the amount of reading that they do. The Wellbeing Survey did not ask for frequency of reading, but frequency of reading books together with other people. While results from the focus group participants indicate this question may have been interpreted differently by different respondents, in general they thought that little reading together had occurred. For example, one participant stated “... because for me, I don’t really like read with my family, but I would definitely read a lot by myself. I would read in my room a lot.”

The general implication of comments from the focus group participants was that of course there are books at home, suggesting this group was not representative of the population who took part in the GUiNZ Wellbeing survey where there was variance in access to books at home and household income. The conclusion drawn in our last report was that children who enjoy reading often are also involved in many different active, interest-based pursuits (Boyask, May et al, 2022). We recognise that many of the kinds of activity that sit alongside reading come

with expenses to families. Reading can be costly, or the costs can be offset through services such as school libraries, public libraries, and free connectivity for digital devices, although many of these public services were not available during lockdown placing more burden on families. The children who made qualitative comments about reading in the GUiNZ Wellbeing Survey indicated that reading was one kind of positive experience amongst many others when they placed reading in a list of enjoyable, interest-based activities. Supporting these kinds of experiences for children so all can benefit from reading has economic costs for families, that may make them less accessible to all, especially if they are only provided at home. Library use at 6y seems to be relatively common across levels of deprivation, yet during the lockdown libraries were closed. Children’s comments in the survey suggest they missed their access to reading material through libraries.

**Relationships between children’s reading affect and their wellbeing**

A psycho-social perspective regards affect as more than emotion. Affect is the intensity that builds through continuously reforming relations between bodies and things (Johnson, 2019), and observations of affect are descriptions of how one thing or body changes another. What we expected to see in results from both the focus group participants and the GUiNZ participants was that the “thing” of lockdown changed the ways children felt about themselves and related to other people (including whānau and friends). What we also wanted to know, was whether engagements with reading from before and during lockdown had affective characteristics that changed children’s experiences of lockdown.

While many GUiNZ Wellbeing Survey participants reported that their general health was good or better than good during lockdown, a large group reported noteworthy depressive or anxiety symptoms. Most of the children surveyed by GUiNZ felt safe and supported by family during lockdown, though there was considerable variance in how often they felt able to talk to someone about their feelings (Figure 1).

The focus group participants who enjoyed reading told us that in general, reading made them feel like they had a friend (*"you have a friend there who's like quite similar and it's comforting to feel like there's someone else"*). They could find friends within the texts they read and identify with the situations of the characters while real-life friends were distant and engagements with peers largely virtual. Reading may have been particularly important for older children during lockdown. A study on the psychological adjustment of children moving into adolescence concluded that "... reading books that are relevant to the new experience of adolescence may offer a source of comfort for children and normalise experiences" (Mak & Fancourt, 2020a, p. 5). We found interesting the comment from one of the survey participants that they had found pleasure in reading dystopian fiction about pandemics. Yet a focus group participant who enjoyed reading less than others said he found a similar sense of identity and connection through other interest-based activities.

None of the focus group participants recalled their own feelings of depression or anxiety but reported others in their bubbles or peer groups did express anxiety. The descriptive statistical results showed associations between some indicators of general wellbeing but there were no similar significant effects for anxiety or depression. Our regression modelling results also showed no significance between reading enjoyment 8y and wellbeing outcomes when adjusted for household income and European ethnicity. We think these results may be effects of the highly subjective nature of the wellbeing reported by 11y survey participants and missing data.

#### **Reading together with others throughout children's life course is related to wellbeing.**

The odds ratios point to children and adults reading together throughout childhood as associated with children's positive experiences, feelings of being supported, and general good health during the pandemic. Notably, in the exploratory statistics reading together with family members from 9m to 8y was associated with higher positive childhood experiences scores and greater family support during lockdown.

Reading together more than once a week during lockdown was associated with increased odds of children reporting they had regular family support, a higher positive experiences score, regular emotional support, and were more connected with others. It also lowered odds (OR 0.78, 95% CI (0.66, 0.94)) of a high depression score on the Centre for Epidemiological Studies Depression Scale for Children 10-item short form for measuring depression. However, we are cautious about any results related to the Reading Together 11y variable. According to the focus group participants the question was ambiguous and may have been interpreted by respondents to the survey as either sharing the same book or reading different texts but sharing some element (e.g. in the same space or talking about them together).

Ordinal regression models that examined associations between wellbeing outcomes and reading affect that were adjusted by household income and European ethnicity indicated that associations between reading affect and wellbeing may not be independent of other factors, and this requires further investigation. We did find a more secure and significant association between perceived general health during lockdown and reported frequency of early reading. Mothers reading to their children at 2y may have long lasting effects on later perceptions of health that transcend socio-economic and cultural influences (see next sub-section).

While the focus group participants did not report frequent reading together, they did report a lot of reading. What people were reading was a topic for conversation during lockdown; it seemed this was important when there were fewer new experiences to discuss and a more limited social circle (*"you could discuss them with your family and like socialise"*). Even if others had not read the same book, they could still talk to each other about what they had read. The focus group participants reported that reading, and the conversations they had after reading, made them feel better. For example, sharing the connections they developed to characters in their reading with others around them gave meaning and pleasurable intensity to their conversations after reading (*"when I was reading a book and then I finished it, it made me feel better, and then like if someone would call me and see if I was okay, I felt more connected to them"*). This example indicates how survey participants' interpretation of 'reading together in my bubble' may have influenced the statistical results. In the illustrated quote from the focus group participant, reading was connected to wellbeing, but 'reading together in my bubble' would not have been.

#### **Cultural factors (engagement with reading objects within a broader culture)**

Other studies have reported gendered differences in the extent and nature of boys' and girls' reading (Scholes et al., 2021), effects on reading of family socio-economic status (Sullivan & Brown, 2015) and predictable patterns across standardised categories of ethnicity (Meissel, Reese & Turnbull, 2019).

In our results, gender was not a good predictor of reading affect before 8y, however, this changes as the children become older. Lower odds of reading enjoyment and reading frequency for boys at 8y in our results are consistent with other studies. While girls had higher odds of enjoying reading than boys, reading enjoyment for children who categorised themselves as in the "middle" and "mostly a girl" were even higher. As children move into adolescence, reading may provide a means of escape from problems (Howard, 2011). Children who do not conform to binary gender norms and experience more challenges in their everyday lives may find greater pleasure through escape into reading.

Socio-economic factors and ethnicity had more significant associations with reading. There are some significant patterns emerging in associations between ethnicity and reading affect. European ethnicity stands out as having the highest percentages in reading frequently and reading together across the life course. It is also markedly higher for numbers of books at home. Yet, as we have noted before (Boyask et al., 2022) reading enjoyment and engagement is relatively common across ethnicities. We also noted that European ethnicity reported the least amount of cultural reading, or mothers reading to children about their ethnicity and culture. While reading together at 2y is a stronger predictor of perceived general health at 11y than household income 8y and European Ethnicity 8y in our linear regression modelling, reading affect variables from later data collection waves had marginally stronger associations with European ethnicity,

While some of our results suggest that wellbeing outcomes can be influenced by affective engagement with reading, and that the affective experience of reading enjoyment is more equitably distributed than other reading affect factors such as time spent reading or access to reading texts there are societal factors that can restrict young people's access to the good of reading. It appears that reading affect outcomes in totality reflect the normative values and resources of a Eurocentric society and education system. Equitable distribution of reading enjoyment and engagement with texts may be difficult when access to good culturally appropriate reading resources is challenging, or if access to enjoyable reading material is dependent upon income. For example, a study on four-year-old

children's access to books in low-income, U.S. ethnic-minority families differentiated between books that focused on instructional concepts like letters or shapes and more engaging narrative books. They reported that "low income, ethnic-minority families, especially those who speak a home language other than English, might be particularly in need of narrative books in both their home language and English" (p. 229).

#### **Implications**

It is clear that reading with other people, talking about reading and identifying one's own experience to what one is reading is beneficial for wellbeing. These benefits are both direct (e.g. sharing in an affective experience of reading with others) and indirect as independent reading appears to have positive impacts on individuals' psychological and emotional states that facilitate better social engagement.

However, the use of secondary data is a limitation in this study as the form and positioning of questions, and resultant data, reflect the priorities of a larger and broader study rather than the priorities of this research. The question in the GUiNZ survey relating to reading during lockdown was framed as part of a series of questions about a wider range of activities and therefore does not reflect the specific characteristics of reading as an activity. The results from the focus groups indicate that it is difficult to draw direct conclusions about the relationship between the act of reading for pleasure and wellbeing during lockdown from the GUiNZ survey because of the ways the 'reading together in my bubble' question can be interpreted and how that compares to the much greater amount of reading that may have occurred.

Key outcomes and suggestions for future investigation include:

#### **Reading and resilience**

Reading for pleasure may reduce the pressures for children of, for example, experiencing living through a pandemic, the experience of constraining gender norms, dissonance between home and school cultures, and negotiating differences in personal characteristics and identities. Books are a place for children to find 'friends' who are like and unlike them and to learn about themselves and others through interacting with those friends.

- Thus, there is need to ensure the availability of texts that are relevant for all children.
- Research that directly investigates whether there are connections between absorption in reading and prosocial outcomes (particularly for minority or disenfranchised communities) is needed for educationalists and policymakers.



### Reading is active and healthy

In our previous report (Boyask et al, 2022) we highlighted the need to ensure that reading for pleasure was viewed as part of an active, healthy lifestyle and not as an individual, passive activity. This message, reinforced through this study, emphasises the importance of social aspects of reading even where the reading takes places in isolation from others. Children need to be encouraged to understand reading as a social, active activity that complements a broader range of lifestyle activities. Stereotypical representations of readers may not be appealing to many young people.

### Reading promotes social connection and wellbeing

The focus groups reinforced the importance of access to texts that include 'like' characters. For some, the 'friend' connections found within reading experiences had benefits for their wellbeing. Participants also reported feelings of being absorbed in reading, and that they felt as if they were there.

- Further research is needed on the relationship between the individual and social benefits of reading for pleasure. This mechanism might provide a way to understand the wider benefits of reading for pleasure. The perception of readers as experiencing what they are reading could provide the means for readers to develop the skills and attitudes that reflect the individual and social benefits of reading for pleasure.

### Reading is beneficial for society

Reading for pleasure benefits wellbeing and so society benefits. When individuals felt better as a result of reading, they had better social interactions. Reading for pleasure is not an individual activity with benefits for that individual alone; those benefits spread through and influence societal networks via activities associated with, and generated by, the act of reading.

- Investigation of the process by which the benefits of RFP are enhanced and spread is recommended.

### Normative or diverse reading cultures?

Children from European cultural backgrounds appear to have advantages in reading that are not extended to other ethnic groups. There are more books in their homes, and they have more experiences of being read to by their parents in early years. While mothers who identify their children as European are less likely to say they read to their children about cultural identity. This may be a result of being part of the mainstream culture. We need to recognise that there are normative cultural values that influence children's reading and how it is perceived. These can only be overcome through changes in material and symbolic culture.

- Encouraging and supporting more young people to continue reading as they grow has material implications. Young people need access to resources like libraries, and culturally appropriate reading texts.
- Further research also needs to consider whether other forms of engagement have similar effects to reading for pleasure for children from different backgrounds in Aotearoa New Zealand (for example, oral interactions between Māori mothers and young children (Neha et al., 2020)) and how to ensure education and library systems, policies and practices are not based in normalised views of how New Zealand European families engage with reading.

### In conclusion

Reading and reading together with others, if not 'reading together in my bubble', does seem to be a protective factor for children's wellbeing in difficult circumstances such as a pandemic. Reading with others earlier in the life course was associated with some better wellbeing outcomes at 11y during the pandemic, and reading during the pandemic provided an element of respite from their immediate situation for the children who engaged in reading for pleasure. In addition to these individual benefits, reading for pleasure had a wider relationship and therefore societal benefits which cannot be ignored. We have made several recommendations for further study that would clarify the nature of those societal benefits and how positive experiences of reading for individuals spread and influence social groupings, as well as how cultural groups that are less represented in the positive outcomes of reading for pleasure might access those benefits, either through reading or in other ways.





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# APPENDIX

Table 14: Outcome variables for Children’s Perception of Wellbeing from the COVID-19 Wellbeing Survey Data (DCW11LDC) for RQ1

Variable Name	Description	
QOL11_Y11LDC	How would you say your health is right now?	Rated on a scale from 1 (Excellent) to 5 (Poor)
FN8_Y11LDC	How often during lockdown have you: – Felt your family supported you in this time	Rated on a scale from 0 (Never) to 4 (Always) plus I don’t know
FN7_Y11LDC	How often during lockdown have you: – Felt able to talk to someone about your feelings	Rated on a scale from 0 (Never) to 4 (Always) plus I don’t know
FN12_Y11LDC	How often during lockdown have you: – Felt safe and protected in your home	Rated on a scale from 0 (Never) to 4 (Always) plus I don’t know
FN6_Y11LDC	How often do you worry about how much money your family has?	Rated on a scale from 1 (Always) to 4 plus I don’t know
DEPRESS_SCORE_Y11LDC	The validated 10-item short form of the Center for Epidemiological Studies Depression Scale (CES-D-10) (Bradley, 2010).	Derived based on child's depression score
PAS_T_SCORE_Y11LDC	The validated 10-item short form of the PROMIS Pediatric Anxiety Symptoms Scale (Irwin, 2010).	Derived based on child's anxiety PROMIS score
LDCTFR_Y11LDC	Have you had any contact (face-to-face, telephone or online) with your friends outside your family during lockdown?	
LDCTFA_Y11LDC	Have you had any contact with extended family members/ whanau not living with you during lockdown?	
FN7_Y11LDC FN8_Y11LDC FN9_Y11LDC FN10_Y11LDC FN11_Y11LDC FN12_Y11LDC FN13_Y11LDC	Positive Childhood Experiences Score (Liebenberg, 2012).	

Table 15: Predictor Reading Affect Variables Prior to the Lockdown

Variable Name	Description	
AE113_Y8CM	Over the past 12 months, thinking about a normal week, how often has {NAME} participated in the following extracurricular activities? – Reading for pleasure	DCW8CM
AE93_Y8CM	In general, how much does {NAME} enjoy reading for pleasure?	DCW8CM
AE12_Y8CM	What does {NAME} usually do when {HE/SHE} has a choice about how to spend free time? (Choose one only) 1) Usually chooses inactive things to do, like TV, computer, drawing or reading 2) Usually chooses active things to do, like bike riding, dancing, or sports 3) Just as likely to choose active as inactive things to do 98) Prefer not to say 99) Don't know	DCW8CM
PC5_Y8CM	Using a scale of 1 to 5 where 1 is never or almost never and 5 is several times a day, overall how often do you do the following activities with {NAME}? – Reading books to/with {NAME}?	DCW8CM
IB6_M9CM	How often during the last week did the baby enjoy being read to?	DCW1C
IB20_M9CM	How often during the last week did the baby look at pictures in books and/or magazines for 5 minutes or longer at a time?	DCW1C
PC5_M9P	How often do you read books to your baby [babies]?	DCW1P
NPC6_M9P	How old was your baby [were your babies] when you first started reading books to him or her/them?	DCW1P
PC5_M9M	How often do you read books to your baby [babies]?	DCW1M
NPC6_M9M	How old was your baby [were your babies] when you first started reading books to him or her [them]?	DCW1M
PC5_Y2M	How often do you read books with your [child/children]?	DCW2M
PC5_Y2P	How often do you read books with your [child/children]?	DCW2P
PC5_M54CM	How often do you encourage {name} to read words?	DCW5C
LD48_M54CM	How often does {name} do the following when using te reo Māori – Read and understand written words in te reo Māori?	DCW5C
PCETH1_M54CM	How often do you read to {name} about {his/her} ethnicity or culture?	DCW5C
HL4_M9P	Approximately how many children's books are in your home right now?	DCW1P
HL5_M9P	Approximately how many other books are in your home right now?	DCW1P
HL4_M9M	Approximately how many children's books are in your home right now?	DCW1M
HL5_M9M	Approximately how many other books are in your home right now?	DCW1M
AE27_M72M	In the past month, has your Growing Up in New Zealand study child/ children done any of these things with you or another family member? Visited a library	DCW6M

Table 16: Percentages of missing data (NA) in the reading affect variables

	Reading Frequency 8y	Reading Enjoyment 8y	Reading together 8y	Library frequency 6y	Reading together 5y	Cultural reading 5y	Reading together 2y	Reading with partner 2y	Reading enjoyment 9m	Reading Frequency 9m	Reading together 9m	Reading with partner 2y	Childrens books at home	Other books at home	Childrens books partner	Other books partner
ra	ra1	ra2	ra3	ra4	ra5	ra6	ra7	ra8	ra9	ra10	ra11	ra12	ra13	ra14	ra15	ra16
%NA	7%	7%	7%	2%	1%	1%	1%	27%	0%	0%	0%	24%	0%	0%	24%	24%

Table 17: Polychoric correlation matrix of ordinal reading affect variables

Polychoric correlations

ra	ra1	ra2	ra3	ra4	ra5	ra6	ra7	ra8	ra9	ra10	ra11	ra12	ra13	ra14	ra15	ra16
ra1	1.00															
ra2	0.88	1.00														
ra3	0.35	0.35	1.00													
ra4	0.20	0.14	0.00	1.00												
ra5	-0.31	-0.23	0.15	-0.15	1.00											
ra6	0.07	0.03	-0.05	0.12	-0.02	1.00										
ra7	-0.33	-0.23	0.06	-0.17	0.50	-0.06	1.00									
ra8	0.01	0.01	0.02	-0.05	0.07	-0.03	0.13	1.00								
ra9	-0.19	-0.17	0.08	-0.10	0.27	-0.01	0.33	0.04	1.00							
ra10	-0.03	-0.08	0.15	-0.05	0.10	-0.08	0.16	0.04	0.51	1.00						
ra11	-0.23	-0.19	0.08	-0.10	0.36	-0.05	0.44	0.08	0.65	0.44	1.00					
ra12	0.04	0.01	0.02	-0.02	0.01	-0.03	-0.02	0.73	0.14	0.15	0.20	1.00				
ra13	-0.17	-0.07	-0.06	-0.07	0.15	-0.02	0.16	-0.10	0.11	-0.07	0.10	-0.16	1.00			
ra14	0.03	0.05	-0.04	-0.01	-0.05	0.00	-0.08	0.57	-0.07	-0.08	-0.05	0.61	0.31	1.00		
ra15	-0.23	-0.15	0.03	-0.12	0.27	-0.06	0.32	-0.11	0.25	0.09	0.23	-0.13	0.44	-0.03	1.00	
ra16	0.01	0.02	-0.04	0.00	-0.01	0.01	-0.02	0.62	-0.01	0.01	0.02	0.69	0.02	0.76	0.15	1.00

- For reading affect variables (ra) names see Table 16
- Shading indicates correlation > 33%

Table 18: Explanatory covariates for exploratory analysis

Context	Factors of influence	GUINZ data descriptions	Data Sets
Societal positioning of children during lockdown	Household income	How often do you worry about how much money your family has?	DCW11LDC
Societal positioning of children from earlier life	Gender	Children’s self-identification of gender	DCW8
		Baby’s gender	DCW1C
	Ethnicity	Children’s self-reported ethnicity at 8 years old	DCW8
	Socio-economic situation	Household income	DCW8
		Area-level deprivation	DCW8

Table 19: Research design

	Statistical Analyses	Interpretive Analyses
Research Question 1: What are the relationships between children’s reading affect prior to the COVID-19 pandemic and their wellbeing during the COVID-19 pandemic?	Exploratory analysis of wellbeing outcome variables (Table 14) during Covid in combination with reading affect prior to Covid (predictors Table 15), and explanatory predictors and confounders (covariates) (Table 18).	Interpretation of statistics within the research team, including theoretical framing
Research Question 2: Was reading books with others influential on children’s wellbeing during the pandemic?	Multiple regression modelling to explore whether or not reading with others influenced wellbeing outcome variables after adjusting for possible confounders. Confounders were first examined for multicollinearity.	Interpretive evaluation of findings through focus groups with young people, meetings, and review by other informants.
Research Question 3: How are relationships between reading for pleasure and wellbeing during the COVID-19 pandemic relevant to the wider wellbeing of children and young people in Aotearoa New Zealand?		Interpretive analysis of findings from RQ1 and 2, COVID survey qualitative data and focus group responses. Interpretive evaluation of findings through transdisciplinary peer review. Theory building within research team.

Table 20: Regression modelling and odds ratios of children’s self-reported clinical measures against reading affect and covariates

		Coefficients	Odds ratio	Lower CI	Upper CI	p-value
Depression score	Enjoys reading 8y <i>enjoys_reading.L</i> <i>enjoys_reading.Q</i> <i>enjoys_reading.C</i> <i>enjoys_reading^4</i>	0.02920 0.03471 -0.04677 -0.15889	1.02963 1.03532 0.95431 0.85309	0.69690 0.71593 0.70431 0.63090	1.52116 1.49741 1.29343 1.15287	0.88322 0.85353 0.76279 0.30132
	Reading together 2y <i>pc5_y2m.L</i> <i>pc5_y2m.Q</i> <i>pc5_y2m.C</i> <i>pc5_y2m.^4</i>	-0.15421 0.01986 0.13917 -0.07941	0.85709 1.02006 1.14932 0.92365	0.58046 0.72167 0.82811 0.70281	1.26691 1.44042 1.59619 1.21362	0.43776 0.56863 0.65211 0.17545
	Household Income 8y <i>HHING_Y8M.L</i> <i>HHING_Y8M.Q</i> <i>HHING_Y8M.C</i> <i>HHING_Y8M^4</i> <i>HHING_Y8M^5</i> <i>HHING_Y8M^6</i>	0.10208 -0.26844 -0.28637 -0.15297 0.06544 -0.14691	1.10748 0.76457 0.75099 1.16529 1.06762 0.86337	0.71122 0.51740 0.50577 0.77977 0.75602 0.65340	1.72970 1.12623 1.11618 1.74154 1.50768 1.14059	0.65211 0.17546 0.15573 0.45478 0.70985 0.30111
	European Ethnicity 8y <i>ETH5_E_Y8C.L</i>	0.09337	1.09786	0.96609	1.24770	0.15242
Anxiety score	Enjoys reading 8y <i>enjoys_reading.L</i> <i>enjoys_reading.Q</i> <i>enjoys_reading.C</i> <i>enjoys_reading^4</i>	-0.03549 0.03617 0.05376 -0.10089	0.96513 1.03683 1.05523 0.90403	0.66497 0.72624 0.78334 0.66766	1.39911 1.48177 1.42085 1.22389	0.85132 0.84218 0.72324 0.51381
	Reading together 2y <i>pc5_y2m.L</i> <i>pc5_y2m.Q</i> <i>pc5_y2m.C</i> <i>pc5_y2m.^4</i>	-0.02572 -0.14632 0.27174 0.00504	0.97461 0.86388 1.31224 1.00505	0.65534 0.60613 0.94359 0.76505	1.45531 1.22726 1.82700 1.32007	0.89920 0.41528 0.10663 0.97112
	Household Income 8y <i>HHING_Y8M.L</i> <i>HHING_Y8M.Q</i> <i>HHING_Y8M.C</i> <i>HHING_Y8M^4</i> <i>HHING_Y8M^5</i> <i>HHING_Y8M^6</i>	-0.25984 -0.07805 -0.08361 -0.15298 -0.07363 -0.03468	0.77117 0.92492 0.91979 0.85814 0.92902 0.96592	0.50761 0.64513 0.62876 0.57422 0.65656 0.72918	1.17376 1.32275 1.34665 1.28231 1.31444 1.27944	0.22360 0.66942 0.66661 0.45450 0.67715 0.80889
	European Ethnicity 8y <i>ETH5_E_Y8C.L</i>	-0.03015	0.97030	0.85418	1.10222	0.64295



Table 21: Relationship between health and reading affect variables

Predictor	Odds_ratio	Lower_CI	Upper_CI	p_value
Reads_frequently_8y	1.6746264	1.2736286	2.191791	0.00015712541
Enjoys_reading_8y	1.6533730	1.2982671	2.108975	0.00002863134
Reading_words_frequently_54m	1.6047021	1.1119999	2.283507	0.01024225083
Partners_reading_frequently_2y	1.5294948	1.0773617	2.148408	0.01317642176
Enjoys_reading_9m	1.3615621	1.0802632	1.717618	0.00832541492
Mothers_reading_frequently_2y	1.2930046	0.8549642	1.914275	0.20815690195
Mothers_reading_frequently_9m	1.2588466	0.9501172	1.656604	0.09995865980
Mothers_many_childrens_books	1.1771025	0.9183890	1.503606	0.19147375166
Reads_together_frequently_8y	1.1272853	0.8848297	1.435287	0.33632046593
Partners_many_childrens_books	1.1209267	0.8408058	1.488326	0.43391006289
Partners_reading_frequently_9m	1.0639997	0.8099166	1.398390	0.68622533518
Cultural_reading_54m	1.0634109	0.8217763	1.383685	0.65575232729
Visits_library_weekly_6y	1.0129659	0.7885982	1.306725	0.95033283378
Engaged_with_books_9m	0.9420312	0.7107973	1.258818	0.66951841613
Partners_many_other_books	0.9408858	0.7011078	1.255820	0.72180684660
Mothers_many_other_books	0.9407306	0.7377218	1.195974	0.63448649670

Table 22: Relationship between family support and reading affect variables

Predictor	Odds_ratio	Lower_CI	Upper_CI	p_value
Mothers_reading_frequently_9m	1.8551864	1.3798513	2.479225	0.00003557983
Mothers_reading_frequently_2y	1.7453929	1.1369133	2.620054	0.00882354942
Reads_together_frequently_8y	1.6179481	1.2315097	2.128924	0.00042576816
Reading_words_frequently_54m	1.5506373	1.0251016	2.295854	0.02722299839
Partners_reading_frequently_2y	1.4812481	1.0042077	2.152524	0.04227172569
Partners_reading_frequently_9m	1.4670555	1.0791377	2.001177	0.01335646424
Enjoys_reading_9m	1.3955729	1.0736017	1.816746	0.01156269658
Reads_frequently_8y	1.3854702	1.0083563	1.887075	0.04027735463
Enjoys_reading_8y	1.3693822	1.0434109	1.799112	0.02223549915
Visits_library_weekly_6y	1.2655866	0.9455805	1.708023	0.10765207621
Engaged_with_books_9m	1.2454839	0.8873434	1.777407	0.22675139286
Mothers_many_childrens_books	1.0921557	0.8222299	1.442754	0.52835035639
Visits_library_weekly_6y	1.0129659	0.7885982	1.306725	0.95033283378
Engaged_with_books_9m	0.9420312	0.7107973	1.258818	0.66951841613
Partners_many_other_books	0.9408858	0.7011078	1.255820	0.72180684660
Mothers_many_other_books	0.9407306	0.7377218	1.195974	0.63448649670
Cultural_reading_54m	1.0453262	0.7819680	1.408267	0.82937544610
Mothers_many_other_books	0.9016198	0.6830352	1.184557	0.46103403652
Partners_many_other_books	0.8286448	0.5918896	1.149569	0.26780934226
Partners_many_childrens_books	0.7578508	0.5386548	1.055539	0.09691129692

Table 23: Relationship between emotional support and reading affect variables

Predictor	Odds_ratio	Lower_CI	Upper_CI	p_value
Reading_words_frequently_54m	1.6225220	1.2061578	2.187738	0.0009855699
Mothers_reading_frequently_2y	1.4143372	1.0309958	1.942900	0.0288917209
Reads_together_frequently_8y	1.3226174	1.1063667	1.581554	0.0018201948
Reads_frequently_8y	1.2871555	1.0366306	1.598490	0.0203666611
Visits_library_weekly_6y	1.2468465	1.0347760	1.503431	0.0182876369
Enjoys_reading_9m	1.2455295	1.0501606	1.477588	0.0105910176
Engaged_with_books_9m	1.2337189	0.9956747	1.530775	0.0502621834
Mothers_reading_frequently_9m	1.2191380	0.9853464	1.508371	0.0633204417
Enjoys_reading_8y	1.2160031	1.0181880	1.452511	0.0299188909
Partners_reading_frequently_9m	1.1967892	0.9824877	1.458204	0.0693872167
Partners_reading_frequently_2y	1.1141655	0.8528375	1.454537	0.4279675570
Mothers_many_childrens_books	1.0936528	0.9085658	1.316202	0.3547567039
Mothers_many_other_books	1.0751389	0.9007370	1.283160	0.4264528518
Partners_many_childrens_books	0.9669879	0.7844376	1.191457	0.7555977732
Partners_many_other_books	0.9669879	0.7844376	1.191457	0.7555977732
Cultural_reading_54m	0.9242889	0.7642455	1.118145	0.4197184810

Table 24: Relationship between feeling safe and reading affect variables

Predictor	Odds_ratio	Lower_CI	Upper_CI	p_value
Reads_together_frequently_8y	2.1838994	1.4152327	3.410461	0.0002476288
Reading_words_frequently_54m	1.6333154	0.8607408	2.908415	0.0889221437
Mothers_reading_frequently_9m	1.5814305	0.9871370	2.477938	0.0472560280
Partners_reading_frequently_2y	1.3803542	0.7114058	2.531733	0.3230963915
Cultural_reading_54m	1.3550463	0.8413404	2.256485	0.2236984236
Mothers_reading_frequently_2y	1.3361968	0.6324312	2.565586	0.3607117116
Enjoys_reading_9m	1.1946030	0.7945446	1.799549	0.3741991184
Reads_frequently_8y	1.0549230	0.6173761	1.737597	0.8023117805
Partners_reading_frequently_9m	1.0463757	0.6383398	1.717968	0.9055592415
Mothers_many_other_books	1.0431788	0.6797668	1.583406	0.8374254043
Visits_library_weekly_6y	0.9945199	0.6425163	1.567446	1.0000000000
Enjoys_reading_8y	0.9897428	0.6451539	1.513674	1.0000000000
Engaged_with_books_9m	0.9825599	0.6005138	1.669931	0.9024500074
Mothers_many_childrens_books	0.8033265	0.4973263	1.264560	0.3888027863
Partners_many_childrens_books	0.7171769	0.4023093	1.232526	0.2576370395
Partners_many_other_books	0.6671046	0.3699714	1.155403	0.1661082448

Table 25: Relationship between material wellbeing and reading affect variables

Predictor	Odds_ratio	Lower_CI	Upper_CI	p_value
Partners_many_other_books	1.3877529	1.1278727	1.708266	0.001658772
Mothers_reading_frequently_9m	1.2860718	1.0398373	1.591439	0.017566280
Mothers_reading_frequently_2y	1.2795765	0.9335111	1.756887	0.121521642
Mothers_many_other_books	1.1470121	0.9617159	1.368133	0.123700414
Mothers_many_childrens_books	1.1064544	0.9200806	1.330642	0.289961408
Partners_reading_frequently_9m	1.1036016	0.9073503	1.342462	0.329479608
Enjoys_reading_9m	1.0889469	0.9189685	1.290499	0.329480741
Enjoys_reading_8y	1.0742983	0.9001410	1.282226	0.426978078
Reading_words_frequently_54m	1.0727878	0.7982918	1.441624	0.662698403
Reads_together_frequently_8y	1.0617176	0.8887621	1.268420	0.505825776
Partners_reading_frequently_2y	1.0466665	0.8020251	1.365174	0.742755082
Engaged_with_books_9m	1.0396755	0.8410310	1.285624	0.751851222
Visits_library_weekly_6y	1.0263627	0.8532862	1.234754	0.782436336
Partners_many_childrens_books	1.0250930	0.8331217	1.261070	0.836639203
Reads_frequently_8y	0.9756581	0.7859954	1.210619	0.830297386
Cultural_reading_54m	0.9231846	0.7639290	1.115636	0.422276221

Table 26: Relationship between high depression score and reading affect variables

Predictor	Odds_ratio	Lower_CI	Upper_CI	p_value
Cultural_reading_54m	1.1287359	0.9279635	1.372292	0.22162124
Mothers_many_other_books	1.1017991	0.9172931	1.324191	0.29403048
Mothers_reading_frequently_9m	0.9951945	0.7983558	1.242194	1.00000000
Mothers_many_childrens_books	0.9800368	0.8094253	1.187371	0.84854241
Mothers_reading_frequently_2y	0.9698785	0.6961407	1.356757	0.87010592
Partners_reading_frequently_9m	0.9573632	0.7825709	1.171229	0.68817441
Partners_many_childrens_books	0.9516449	0.7689775	1.178318	0.67103041
Enjoys_reading_9m	0.9497831	0.7964932	1.132567	0.56798045
Reads_frequently_8y	0.9471628	0.7566626	1.186876	0.65429953
Reads_together_frequently_8y	0.9361290	0.7793176	1.124560	0.49258228
Partners_reading_frequently_2y	0.9298627	0.7074217	1.224421	0.58781854
Partners_many_other_books	0.8954353	0.7237066	1.108434	0.31290641
Enjoys_reading_8y	0.8542820	0.7116611	1.025432	0.09182837
Visits_library_weekly_6y	0.8472288	0.6986110	1.026561	0.08656913
Engaged_with_books_9m	0.8315168	0.6657340	1.036646	0.10308322
Reading_words_frequently_54m	0.7563988	0.5580661	1.026209	0.06872109

Table 27: Relationship between high anxiety score and reading affect variables

Predictor	Odds_ratio	Lower_CI	Upper_CI	p_value
Cultural_reading_54m	1.2539845	1.0316001	1.523975	0.02161486
Engaged_with_books_9m	1.2074626	0.9702913	1.501648	0.09036646
Partners_reading_frequently_9m	1.1251241	0.9193753	1.377210	0.24790708
Reads_together_frequently_8y	1.1012677	0.9166558	1.323462	0.29323925
Partners_reading_frequently_2y	1.0340837	0.7855873	1.364500	0.83859342
Visits_library_weekly_6y	1.0094142	0.8330036	1.222416	0.92391922
Mothers_many_other_books	1.0034162	0.8357870	1.205150	1.00000000
Mothers_reading_frequently_9m	1.0013946	0.8038092	1.249125	1.00000000
Enjoys_reading_9m	0.9948341	0.8345032	1.186034	0.96501940
Mothers_reading_frequently_2y	0.9936174	0.7117948	1.392785	1.00000000
Enjoys_reading_8y	0.9906356	0.8252254	1.189344	0.92740027
Mothers_many_childrens_books	0.9138107	0.7549280	1.106622	0.36415584
Reads_frequently_8y	0.9039503	0.7232155	1.130854	0.37301102
Partners_many_other_books	0.8894784	0.7184992	1.101609	0.28696064
Reading_words_frequently_54m	0.8829368	0.6500091	1.202042	0.44702591
Partners_many_childrens_books	0.8667785	0.7004852	1.072965	0.18411683

Table 28: Relationship between connectedness and reading affect variables

Predictor	Odds_ratio	Lower_CI	Upper_CI	p_value
Partners_reading_frequently_9m	1.3157333	1.0641686	1.627546	0.01133612
Cultural_reading_54m	1.2798255	1.0350506	1.585197	0.02322183
Enjoys_reading_9m	1.2139944	1.0062819	1.464850	0.04289062
Reads_together_frequently_8y	1.1468251	0.9432041	1.394351	0.16941368
Mothers_reading_frequently_9m	1.1327426	0.8871354	1.444311	0.31583817
Engaged_with_books_9m	1.1092004	0.8795133	1.401702	0.38313867
Visits_library_weekly_6y	1.0716586	0.8766674	1.311986	0.50088182
Enjoys_reading_8y	0.9776500	0.8050550	1.186999	0.81945355
Reading_words_frequently_54m	0.9547177	0.6808236	1.331855	0.78629844
Partners_many_other_books	0.9466535	0.7524028	1.189822	0.63900510
Partners_many_childrens_books	0.9384877	0.7487793	1.175171	0.58073122
Partners_reading_frequently_2y	0.9066435	0.6643438	1.232604	0.53377991
Mothers_many_other_books	0.8597729	0.7033694	1.049885	0.13914196
Mothers_reading_frequently_2y	0.8448379	0.5790504	1.222109	0.37522431
Reads_frequently_8y	0.8279460	0.6451913	1.059642	0.13551531
Mothers_many_childrens_books	0.8207289	0.6660606	1.010600	0.06313763



Table 29: Relationship between positive childhood experiences and reading affect variables

Predictor	Odds_ratio	Lower_CI	Upper_CI	p_value
Reading_words_frequently_54m	1.6400221	1.2455273	2.160961	0.0004296755
Mothers_reading_frequently_9m	1.4402037	1.1782009	1.761132	0.0003732908
Reads_frequently_8y	1.4125036	1.1530349	1.730469	0.0008516887
Mothers_reading_frequently_2y	1.3944666	1.0404761	1.869468	0.0260325162
Enjoys_reading_9m	1.3609879	1.1595647	1.597705	0.0001633306
Reads_together_frequently_8y	1.3516776	1.1430462	1.598615	0.0004283099
Enjoys_reading_8y	1.2932988	1.0950197	1.528055	0.0024781660
Partners_reading_frequently_9m	1.2584965	1.0477408	1.513080	0.0141745593
Visits_library_weekly_6y	1.1888663	0.9995548	1.414344	0.0506985630
Partners_reading_frequently_2y	1.1735396	0.9158463	1.504096	0.2058663711
Engaged_with_books_9m	1.1406031	0.9351970	1.391903	0.1945697697
Mothers_many_other_books	1.1033872	0.9349619	1.301910	0.2440040094
Cultural_reading_54m	1.0236508	0.8558837	1.224887	0.7982071980
Partners_many_other_books	1.0011378	0.8253545	1.215728	0.9908150903
Mothers_many_childrens_books	0.9888889	0.8314371	1.175977	0.8994522568
Partners_many_childrens_books	0.8781912	0.7229079	1.066198	0.1899701253

Table 30: Percentage of self-reported gender at 8y associated with reading affect variables

Reading Affect	Boy	Mostly a Boy	Middle	Mostly a girl	Girl	p-value
Enjoys reading 8y	41	49	59	59	54	<b>2.2e-16</b>
Reads frequently 8y	68	74	80	78	78	<b>1.76e-11</b>
Reads together 8y	55	57	53	51	53	0.3618
Reading words frequently 5y	87	84	89	86	88	0.3748
Cultural reading 5y	26	31	27	30	30	0.2945
Mothers reading frequently 2y	88	83	92	90	90	<b>0.0001651</b>
Partners reading frequently 2y	78	79	82	80	80	0.5354
Mothers reading frequently 9m	77	72	81	77	78	<b>0.01401</b>
Partners reading frequently 9m	44	48	50	46	46	0.08765
Enjoys reading 9m	49	47	53	49	49	0.4381
Engaged with books 9m	18	20	22	20	21	0.2111
Mothers many children’s books	66	62	63	64	64	0.6378
Mothers many other books	57	56	59	55	54	0.2978
Partners many children’s books	63	57	59	59	62	0.2638
Partners many other books	60	60	62	59	57	0.446

P-values less than 0.05 are in bold to indicate evidence to reject the null hypothesis.

Table 31: Was reading books with others influential on children’s wellbeing during the COVID-19 pandemic?

Predictor	Outcome	Odds_ratio	Lower_CI	Upper_CI	p_value
Reads together frequently	Regular family support	1.8447735	1.3969244	2.4500374	0.000007324135
Reads together frequently	Regularly feels safe	1.4288373	0.9322299	2.2160007	0.102782205797
Reads together frequently	Positive experiences score	1.3987757	1.1881294	1.6471760	0.000056394458
Reads together frequently	Regular emotional support	1.3111268	1.1014577	1.5612664	0.002059748764
Reads together frequently	Connectedness	1.2109178	1.0019740	1.4641085	0.047888627060
Reads together frequently	Very good health	1.1902934	0.9401711	1.5094225	0.145710438203
Reads together frequently	No money worries	1.0956548	0.9217374	1.3025088	0.300397272427
Reads together frequently	High anxiety score	1.0003597	0.8380318	1.1939929	1.000000000000
Reads together frequently	High depression score	0.7829423	0.6550175	0.9354238	0.006050999192



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