

Maternal perceptions of aspects of their partnerships with early learning services and schools Influences and associations



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Policy summary

Parent–educator partnerships are increasingly emphasised in policy, and by Māori, Pacific peoples, parents of learners with learning support needs and other groups. Research in this area underlines the value of parents and educators working together in support of children’s learning and wellbeing. Such joint work can add value to the positive contributions that whānau already make to their children’s wellbeing and learning. Parent–educator partnerships range from good communication and information sharing, within respectful relationships, to whānau involvement in curriculum and school learning decision-making.

Parent–educator and whānau–educator partnerships are included in the recently announced *Statement of National Education and Learning Priorities*, and in the success measures for the recently refreshed Ka Hikitia policy, the *Action Plan for Pacific Education 2020–2030*, and the *Learning Support Action Plan*.

This analysis of material from the broadly representative GUINZ cohort of over 5,000 gives the first national quantitative picture of maternal views of some aspects of parent–educator partnerships in Aotearoa New Zealand when children were in their final months at an early learning service (ELS), and after their first year at school. It could provide some benchmarks to track changes in maternal views of some aspects of parent–educator partnerships that could indicate the effectiveness of the current policy emphases on schools working more collaboratively with parents.

Current maternal views, reflecting experiences covering a large number of ELS and schools, were generally positive.

We found in relation to ELSs that

- 79% of mothers were very satisfied or satisfied with their child’s ELS effect on their child’s development of cultural awareness and/or belonging
- 92% of mothers were very satisfied or satisfied with the communication between them and their child’s ELS.

The majority of mothers were also positive about their child’s school in terms of

- being welcomed and included
- experiencing good communication
- feeling supported.

Three aspects stood out with lower levels of maternal positivity about their child’s school:

- I feel my child’s teacher is interested in getting to know me
- I feel my child’s teacher pays attention to my suggestions
- Satisfaction with the school’s response to the child’s cultural needs

Maternal satisfaction with their child's school at the end of their first year was related to their views of the aspects of parent–educator partnerships that we asked about. This shows that these aspects do matter for parents.

Mothers of Asian children, mothers who mainly spoke a language other than English at home, and those who found paid work interfering with their home life were less positive about their experiences of these aspects of maternal-educator partnerships. It would therefore be useful to understand more about how those ELSs and schools have found ways to develop meaningful and effective partnerships with parents that help them improve their children's learning. This should also include finding ways for those ELSs and schools to share what they have found effective with other ELSs and schools, and their communities.

Being secure in their own cultural identity, taking part in cultural activities, engagement with their child's learning at home, encouragement and support for their child or having authoritarian parenting values were evident for mothers who were more positive. Maternal self-efficacy and confidence around their child's learning was also markedly associated with positive views of maternal-educator partnerships. It seems likely that maternal-educator partnerships can enhance what mothers and children do at home as well as enhance what they bring to the partnership, for the benefit of children's learning and wellbeing.

Mothers who expressed security in their own cultural identity tended to be more positive than those who did not. One interesting exception was that mothers of Māori children who were secure in their own cultural identity were less satisfied than others with their child's ELS's effect on their child's development of cultural awareness and/or belonging. Mothers of Māori children were also less satisfied than mothers of non-Māori children with the ELS's effect on their child's development of cultural awareness and/or belonging. This underlines the value of the policy emphasis on supporting educational services to provide more culturally responsive learning, and developing more meaningful partnerships with whānau as they do so.

Executive summary

Parent–educator partnerships can make positive contributions to children's learning. They are included in the recently announced *Statement of National Education and Learning Priorities*, and success measures for the recently refreshed *Ka Hikitia* policy, the *Action Plan for Pacific Education 2020–2030*, and the *Learning Support Action Plan*.

This report uses GUINZ data from over 5,000 mothers who gave birth between April 2009 and March 2010 to describe their experiences of key aspects of parent–educator partnerships that support children's learning when their children were aged 54 months, in their last six or so months in an early learning service (ELS), and aged 72 months, after a year or so of school. The aspects that GUINZ data allows us to analyse are related to communication, support, and

feeling that culture is valued. These data cannot shed light on some other key aspects, such as use of parent and whānau knowledge and participation in decisions about learners' educational experience.

We formed a measure of parent–educator partnerships at age 72 months from relevant GUINZ data that included feeling culture is valued, experiencing good communication, feeling welcomed and included, and feeling supported.

The relevant GUINZ data at age 54 months did not form a measure, so we used three indicators: the number of different kinds of ELS-mother communication, maternal satisfaction with ELS communication, and maternal satisfaction with the ELS contribution to the development of their child's cultural awareness/belonging.

We then used the age-72-months measure and the age-54-months indicators to analyse

- how these maternal experiences of aspects of partnerships were related to child and maternal characteristics
- how they were related to child performance on early reading and maths measures, maternal perception of the child's readiness for school at 54 months, and maternal satisfaction with their child's learning at 72 months
- the continuity of maternal experiences of partnerships from ELS to school, and whether this is affected by aspects of the transition to school, or child or maternal characteristics.

Overall, **good levels of these aspects of mother-educator partnerships are widely experienced** at both time points. Most mothers in the GUINZ dataset were positive about their experiences.

The items that showed more diversity in views at age 72 months, with 25% or more giving neutral or disagree/dissatisfied answers were:

- I feel that my child's teacher is interested in getting to know me
- I feel that my child's teacher pays attention to my suggestions
- Satisfaction with the school's response to child's cultural needs

Mothers showed less satisfaction with their child's ELS in relation to development of cultural awareness and/or belonging (40% very satisfied with this), compared with 65% who were very satisfied with their communication with the ELS.

Positive maternal perceptions of partnerships with educators at both 54 and 72 months were mostly associated with higher maternal security of cultural identity, and engagement in children's learning at home.

Parenting behaviours and values also had some positive associations at 72 months.

Having work that interferes with family/home life and material deprivation are negatively associated with maternal perceptions of

these partnerships. Maternal self-efficacy and confidence around their child's learning reduced the size of associations of these aspects when added to the 72-months model.

Interestingly, **mothers of Māori children who were secure in their own cultural identify reported less satisfaction with their ELS contribution to the development of their child's cultural awareness** than those mothers of Māori children who were not secure in their own cultural identity.

Mothers of Asian children and those whose home language was not English had less communication with their child's ELS than others, and lower scores on the 72-months maternal-educator partnership scale.

In the models using these aspects of partnerships as a mediator between maternal and child aspects and maternal satisfaction with the ELS's contribution to their child, we found that **maternal involvement in ELS activities had the strongest association with the number of forms of communication between a mother and their child's ELS.**

We also found that **the more forms of mother-ELS communication, the higher the maternal satisfaction with the ELS's contribution to their child's learning.** However, more forms of communication were not predictive of children's performance on a counting task.

Maternal satisfaction with their child's school or kura was more strongly predicted by their level of partnerships with educators, mainly because of a strong contribution to the latter from maternal positivity about the school environment. Interestingly, the number of maternal involvements with the school made only a small contribution to the maternal-educator partnership levels.

Almost all mothers who were satisfied with their communication with their child's ELS were positive about their partnership with their child's school, as were most of those who had been neutral or dissatisfied.

The more positively mothers rated their relationship with their child's ELS, the stronger they rated their partnership with school or kura.

Continuity was evident between maternal views of their ELS communications and support for their child's cultural development/belonging and their levels on our partnership measure at age 72 months for those who were positive. Most mothers who had low satisfaction with their ELS's communication were more positive about their partnership with their child's school at age 72 months.

Introduction

The importance of good partnerships between family and whānau and educators aimed at supporting a child's learning has been increasingly emphasised in policy. We know that almost all parents, irrespective of their home circumstances, have high aspirations for their children's learning and want to engage meaningfully with the early learning service, school, or kura. To ensure that education providers focus on building meaningful Learning Partnerships with parents, the first objective of the recently announced Statement of National Education and Learning Priorities (NELP) states that "Learners with their whānau are at the centre of education". The NELP apply to all schools and licensed early learning services (ELS).

One of the actions for schools supporting this objective is "Partner with family and whānau to equip every learner/ākonga to build and realise their aspirations".¹

Whānau-educator partnerships have been increasingly emphasised by tangata whenua and Pacific communities. The recently refreshed *Ka Hikitia* policy includes these success measures²:

- *Māori whānau have regular and positive engagements with our education services.*
- *Māori learners and whānau feel a strong sense of belonging in our education system and are free from racism.*

The *Action Plan for Pacific Education 2020–2030* includes these success measures³:

- *Pacific learners and their families feel accepted and included*
- *Pacific families feel confident supporting their children in education, including the measure: Families receiving regular, helpful, and meaningful communication.*

The *Learning Support Action Plan 2019–2025*⁴ priorities also mention work with parents and whānau to better include students and improve their learning.

The existing research related to parent-educator partnerships and their influence on children's learning covers a spectrum ranging from different kinds of parent involvement in their child's school, to joint work between parents and the school on localised goals, curriculum, and pedagogy, and sharing knowledge and decision-making. Epstein's (2001) continuum of parental involvement in their

¹ <https://education.govt.nz/assets/Documents/NELP-TES-documents/NELP-2020-Schools-and-kura.pdf>

² <https://education.govt.nz/our-work/overall-strategies-and-policies/ka-hikitia-ka-hapaitia/ka-hikitia-ka-hapaitia-the-maori-education-strategy/>

³ <https://conversation.education.govt.nz/assets/PACIFIC/Action-Plan-for-Pacific-Education/Pacific-Education-Plan-Summary.pdf>

⁴ <https://conversation.education.govt.nz/assets/DLSAP/Learning-Support-Action-Plan-2019-to-2025-English-V2.pdf>

child's learning has been widely used in previous research to conceptualise parent–educator partnerships. The continuum goes from two-way communication between home and the school, and volunteering in the school, to school support for parents to help their child's learning at home, and parent input into decision-making for their child and the school curriculum.

Hoover-Dempsey and Sandler (1997) described three factors that can influence parental involvement in their child's learning: their construction of their parental role, their sense of efficacy, and opportunities offered by the school and child for parental involvement. Hornby and Lafaele (2011) noted that paid work demands, a child with behavioural needs, and large families can make it harder for parents to be involved in their child's learning, without support.

Generally, research finds benefits for children's learning from parent–educator partnerships, with good communication and relationships prominent in such partnerships (see, for example, Anthony & Ogg, 2019; Averill et al., 2016; Bull et al., 2008; Iruka et al., 2011). In their review of the literature on enablers and barriers to parental involvement in children's learning, Averill et al. (2016, p. 125) concluded: "Given the unique demographic and cultural perspectives in New Zealand school communities and ongoing inequity of access to mathematics achievement, we believe further investigation into parental involvement and the effects of such involvement on achievement, affect, and well-being within New Zealand English-medium contexts is vital".

Some of this investigation has been undertaken. Having 'a strategy to access family and/or community funds of knowledge' was identified as one of the most effective forms of family–school connection in the best evidence synthesis of research on leadership effects on student outcomes (Alton-Lee et al., 2009). The evaluation of Te Kotahitanga phase 5 identified "Educationally powerful connections based on a cultural pedagogy of relations" as one of the prime elements of the positive gains for Māori students (Alton-Lee 2015, pp. 58–61). Descriptions of educationally powerful connections which were effective in countering student underachievement are given in an Education Review Office report. Among the four most important factors for success in these relationships were "a whole-school focus on involving parents and whānau", and "teachers and leaders involving parents and whānau in designing and implementing a solution to underachievement" (Education Review Office, 2015, p. 16).

The *Growing Up in New Zealand* (GUiNZ) data provide a good opportunity to investigate the extent to which mothers in this country experience some, but not all, aspects of positive parent–educator partnerships identified in the literature and included in policy. The data do not cover shared decision-making or kinds of support that help parents understand effective ways to help their children learn, but they do allow us to investigate these aspects: feeling that culture was valued, experiencing good communication, feeling welcomed and included, and feeling supported. From here on we refer to these aspects of parent–educator partnerships as Learning Partnerships.

Analysis of the GUiNZ data also allows us to see how these aspects of Learning Partnerships are related to different maternal and family characteristics and situations; and whether these partnerships are related to maternal satisfaction with their child's school and perceptions of their learning; and whether Learning Partnerships are related to school readiness outcome measures (at 54 months). The results of this analysis can provide useful insights for educational institutions on how they could strengthen partnerships, and for policymakers, how policy could be focused to support educational institutions to do this.

A secondary aim of our research was to establish a construct of parent–educator Learning Partnerships at the start of formal schooling which could then be used in subsequent analyses of student achievement data when collected by GUiNZ.

The research reported here uses GUiNZ age-54 months and age-72-months data, and is guided by the following research questions:

1. What is the picture of Learning Partnerships (feeling culture is valued, experiencing good communication, feeling welcomed and included, and feeling supported) between mothers and their child's early learning service (at age 54 months) and between mothers and their child's school (at age 72 months)?
2. How are Learning Partnerships between mothers and early learning services/schools/kura related to:
 - a. child characteristics (ethnicity, special needs, order in family)
 - b. maternal characteristics (security of cultural identity and language use, maternal self-efficacy and confidence, parenting values, support for child's learning at home, education level, material hardship, family type, family size, maternal age at child's birth).In particular, what patterns do we see for mothers of Māori children, mothers of Pacific children, mothers of Asian children, and mothers of children with special needs?
3. How are Learning Partnerships between mothers and ELSs related to school readiness and maternal satisfaction with their child's learning (at 54 months), and maternal satisfaction with their child's learning (at 72 months)?
4. Is there continuity of Learning Partnerships between early learning service and school? Is continuity or the lack of it related to aspects of the transition to school, and/or other variables associated with the mother or child?

Method

Engagement with policy collaborators

Once the research team had had a preliminary look at the GUiNZ reports and items used at ages 54 and 72 months, we approached the Ministry of Education to gauge the policy interest in finding out more about the extent of Learning Partnerships experienced by mothers, and how these related to early learning and school experiences. Their initial positive response gave us information on the aspects of Learning Partnerships that would be of most use in policy. This fed into a draft outline of research objective, aims, and questions, which—alongside the aspects covered by the GUiNZ data—were discussed with relevant Ministry of Education policy managers, and further refined.

Once funding for this project was approved, we had a further discussion of the project's aims and methods with Ministry of Education staff. We have had helpful feedback from our Ministry of Education policy collaborator on each of our two progress reports, and on the draft of this report.

Use of GUiNZ data

The *Growing Up in New Zealand* longitudinal study provides a broadly representative child cohort of all births in the country between 2007 and 2010 with respect to ethnicity, maternal age, and socio-economic position (Morton et al., 2018). The study includes data gathered from children through surveys, observation, tasks, and structured interviews. Data from mothers has been collected through structured interviews during pregnancy, when children were around 9 months old, 24 months, 54 months, and online when children were 72 months old. A subsequent data wave occurred when the children were aged 8, and an age-12 data wave is planned.

We have analysed maternal and child data from the 54-month wave and relevant maternal data from the 72-month wave. We also used data from the antenatal wave on maternal ethnicity, age at birth of first child, and qualifications.

We constructed a dataset for our analyses that consists of the 5,528 children (and their associated 5,457 mothers) who:

1. were in school in the 72-month wave
2. have data in the 54-month Mother dataset, 54-month Child dataset, and 72-month Mother dataset.

These are most of the children whose mothers took part in GUiNZ at 72 months ($n = 5,709$) (Morton et al., 2018, Table 1, Section 2, p. 36). Table 1 in Appendix

1 shows that the distributions of key social characteristics in our analysis dataset are very similar to those in the overall GUiNZ 72-months dataset.

Throughout our data analysis we used R software (R Core Team, 2020). We used the R-package dplyr (Wickham et al., 2021) for data manipulation the R-packages psych (Revelle, 2019), lavaan (Rosseel, 2012) and TAM (Robitzsch, Kiefer, and Wu, 2020) for statistical modelling.

Data analysis for Research Question 1

We first identified the GUiNZ items that matched our framing of Learning Partnerships and were relevant to addressing our research questions, then produced frequency tables.

Next, we undertook exploratory factor analysis with the aim of constructing measures of Learning Partnership at age 54 months and 72 months. Given the fewer GUiNZ items relating to Learning Partnerships at age 54 months, we were unable to construct a single measure, so we have used three single indicators in our analysis for age 54 months.

We constructed a scale from the 72-month Learning Partnership measure to enable linear regression modelling to answer Research Question 2. Exploratory factor analysis of 5,351 rows of data excluding 118 missing values, using the maximum likelihood extraction method, with varimax rotation, gave a single factor explaining 46% of the variance between individual scale scores with a Cronbach's alpha of 0.91.

Our next step was to create a scale for analysis purposes. We fitted a Partial Credit Rasch model, which allowed us to handle missing data efficiently. To build a scale, we removed all data with more than three missing responses across the items that make up the factor. The Rasch model also allowed us to investigate response categories that were contributing little measurement information. In constructing the scale, we made a single category of the 'Strongly disagree', 'Disagree' and 'Neither agree nor disagree', and the 'Very dissatisfied', 'Dissatisfied' and 'Neither satisfied nor dissatisfied' response categories, because of small numbers of responses in each of these categories.

Data analysis for Research Question 2

Next, we constructed variables from the GUiNZ data that might account for any differences in maternal perceptions of these Learning Partnerships, as well as maternal satisfaction with their child's learning and measures of school readiness outcomes. We used factor analysis and Rasch analysis to create scales from sets of variables. All scales bar one demonstrated acceptable levels of reliability as indicated by Cronbach's alpha. These scales are described in Appendix 2.

We then used linear and logistic models, as appropriate, to test the statistical significance of the association between (1) each of our Learning Partnerships indicators at 54 months and these explanatory variables; and (2) our measure of Learning Partnerships at 72 months and these explanatory variables. The tests of significance we used are those appropriate to the nature of each variable, and include *t*-tests, *F*-tests (ANOVA), and tests of statistical significance used in linear and logistic regression.

All explanatory variables found to have a statistically significant association ($p < 0.05$) with any of the three Learning Partnership indicators at age 54 months or the Learning Partnerships measure at 72 months were included in our final linear regression models. Appendix 3 provides a list of the variables that were included in our initial modelling and indicates those variables that were excluded from our final model due to weak or non-significant associations.

We checked the assumptions for the final model using the Shapiro-Wilk test for normality, the Breusch-Pagan test for homoscedasticity, and the Durbin Watson test for multicollinearity, and checked the potential influence of outliers and high leverage points. The model passed all these tests. Pairwise scatterplots and measures of correlation were used to check for relationships between the scales used as predictors in the final linear regression model. These showed low correlations, indicating independence between the predictors.

Data analysis for Research Question 3

To answer Research Question 3, we included only the maternal, child, and contextual variables that were significantly associated with our measure of Learning Partnerships at age 72 months in a structural equation model. The model tests whether this Learning Partnerships measure mediates or accounts for the relationship between the maternal, child, and contextual variables in the model and maternal satisfaction with their child's learning at 72 months (see Appendix 2, Table 11, for a description of this scale).

To answer the same question using the 54-months data, we focused on the one which showed the most diversity between mothers. We tested the number of forms of ELS-maternal communication as a mediator between maternal, child, and contextual factors, and maternal satisfaction with the ELS contribution to their child's learning at 54 months.

Data analysis for Research Question 4

To analyse the continuity of Learning Partnerships over the transition between early childhood education and school, we used cross-tabulations and then chi-square tests. This enabled us to explore whether those mothers who report good Learning Partnerships with an ELS at 54 months continue to report good Learning Partnerships with school at 72 months, and to see if continuity of good Learning Partnerships is related to aspects of transition to school and other maternal and child characteristics.

Results

Research Question 1: The picture of Learning Partnerships

Learning Partnerships are widely experienced by mothers of 54- and 72-month-old children in Aotearoa New Zealand

The frequencies of the items relating to Learning Partnerships give a largely positive picture of the GUINZ mothers' perspectives. Most mothers indicated 'strongly agree' or 'agree', or said they were 'very satisfied' or 'satisfied' with the items related to key aspects of Learning Partnerships. Disagreement or dissatisfaction is generally 3% or less.

Learning Partnerships at 54 months

There were three items in the GUINZ 54-months data that related to two of the four conceptual groupings of our framing of Learning Partnerships: feeling that culture is valued and experiencing good communication.

The total number of responses varied slightly across the three items due to a small number of mothers who either did not respond or were not using an ELS.

Feeling that culture is valued

Table 1 shows that most mothers reported being very satisfied (40%) or satisfied (39%) with their child's ELS's effect on their child's development of cultural awareness and/or belonging.

There were no statistically significant differences for mothers of Māori, Pacific, or MELAA children.⁵ However, mothers of Asian children reported less satisfaction with ELS effects on their child's development of cultural awareness and/or belonging: 31% were very satisfied, compared with 43% of mothers of non-Asian children. Also, mothers of Pākehā children reported slightly more satisfaction: 43% were very satisfied mothers compared with 37% of mothers of non-Pākehā children.

⁵ Our analysis of differences related to ethnicity compares those whose child is identified with one grouping with those whose child is not. Here there was no statistically significant difference between the satisfaction levels of mothers of Māori children compared with mothers of non-Māori children.

Table 1 Maternal satisfaction with ELS in relation to child's development of cultural awareness and/or belonging (N = 5,348)

| | N | % |
|-------------------|-------|----|
| Very satisfied | 2,207 | 40 |
| Satisfied | 2,174 | 39 |
| Neither/nor | 901 | 16 |
| Dissatisfied | 51 | 1 |
| Very dissatisfied | 15 | 0 |
| Missing | 180 | 3 |

Experiencing good communication

Table 2 shows that most mothers reported being very satisfied (65%) or satisfied (27%) with the communication between them and their child's ELS.

Table 2 Maternal satisfaction with the communication between them and their child's ELS (N = 5,362)

| | N | % |
|-------------------|-------|----|
| Very satisfied | 3,616 | 65 |
| Satisfied | 1,476 | 27 |
| Neither/nor | 200 | 4 |
| Dissatisfied | 60 | 1 |
| Very dissatisfied | 10 | 0 |
| Missing | 166 | 3 |

Table 3 below provides a breakdown of the forms of communication mothers reported with their child's early learning service. Only 10 mothers said there was no communication between their child's early learning service and themselves.⁶ Almost all (92%) had short face-to-face conversations, and 72% were getting information about their child's activities and progress through learning stories or portfolios, which usually ask parents to comment or share information about what they are seeing at home. Other common forms of ELS initiated communication were general, such as newsletters (60%) and noticeboards (51%). Around 40% noted phone calls and emails, which were likely to be individual. The median number of different forms of mother–ELS communication was 5.

⁶ The item did not ask who initiated the communication.

Table 3 Forms of mother–ELS (N = 5,348)

| | N | % |
|-----------------------------------|-------|----|
| Short, face-to-face conversations | 5,060 | 92 |
| Learning story or portfolio | 3,942 | 72 |
| Regular newsletters | 3,277 | 60 |
| Notice board | 2,823 | 51 |
| Organised events | 2,484 | 45 |
| Phone calls | 2,338 | 43 |
| Emails | 2,175 | 40 |
| Meetings with staff | 1,455 | 26 |
| Written entries in a notebook | 1,204 | 22 |
| Texts | 809 | 15 |
| Online communication boards | 711 | 13 |
| Social media | 621 | 11 |
| Visits to the home | 187 | 3 |
| No communication | 10 | 0 |

Constructing a Learning Partnerships measure at 54 months

An exploratory factor analysis showed that it was not possible to form a reliable 3-item factor from the three Learning Partnership indicators at 54 months. Therefore, we have used the three indicators as individual proxies for the strength of the Learning Partnership between mothers and their child's ELS at age 54 months.

Learning Partnerships at 72 months

Table 4 next shows maternal views of their child's school for each of our four conceptual groupings of components of a Learning Partnership. As shown in this table, the majority of mothers (two-thirds or more) rated all items positively.

Being welcomed and included was the conceptual grouping that had the highest ratings: four of the five items in this grouping had 45% to 53% strong agreement among the mothers.

Three items had 25% or more of mothers giving neutral or disagree/dissatisfied responses:

- I feel that my child's teacher is interested in getting to know me (32%)
- I feel that my child's teacher pays attention to my suggestions (26%)
- Satisfaction with school's response to child's cultural needs (25%)

A fourth item had 14% of mothers giving a neutral or disagree/dissatisfied response: I enjoy talking to my child's teacher.

The rest of the items had between 6% and 11% neutral or disagree/dissatisfied responses, as shown in Table 4 below.

Because we are interested in culturally responsive Learning Partnerships, which are particularly important for those who are not part of the dominant Pākehā/European grouping, we cross-tabulated each item in the Learning Partnership measure in terms of child ethnicity (Māori compared with non-Māori, Pacific compared with non-Pacific, European compared with non-European, Asian compared with non-Asian). The four groupings had similar levels of neutral or disagree/dissatisfied responses, but mothers of Asian children were significantly less likely to strongly agree or be very satisfied compared to the other three ethnic groupings.

Table 4 Maternal views included in the 72 month Learning Partnership measure (N = 5,671)

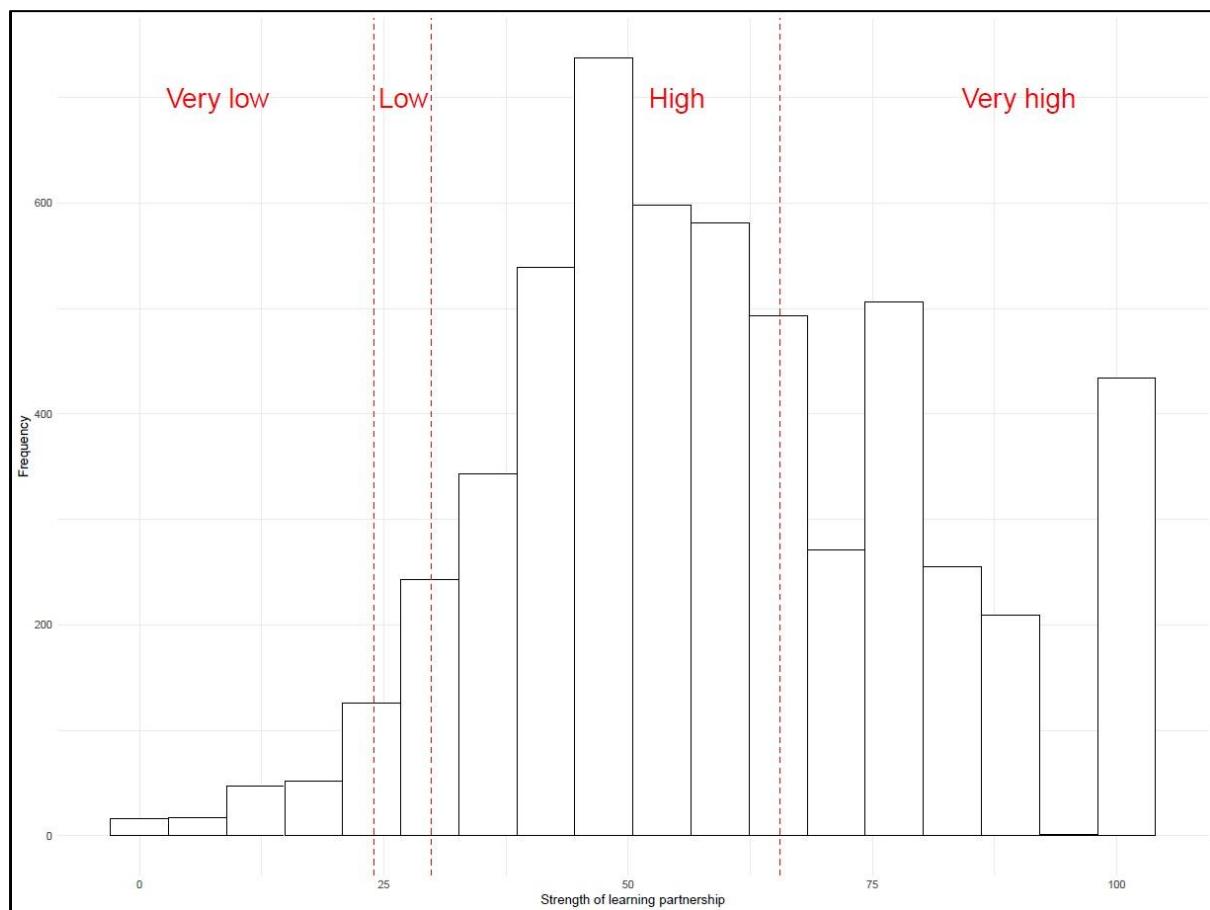
| Being welcomed and included | Missing/don't know/prefer not to say | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|--|--------------------------------------|-------------------|--------------|---------|-----------|----------------|
| I feel welcome to visit my child's school | 1% | 2% | 2% | 4% | 39% | 53% |
| I feel that my child's school is a good place to be | 1% | 1% | 1% | 4% | 45% | 48% |
| I think that my child feels like they belong in their school | 1% | 1% | 1% | 4% | 45% | 48% |
| I feel my child's teacher cares about my child | 1% | 1% | 1% | 7% | 45% | 45% |
| I feel that my child's teacher is interested in getting to know me | 2% | 1% | 6% | 25% | 41% | 24% |
| Experiencing good communication | Missing/don't know/prefer not to say | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
| I feel welcome to talk to my child's teacher | 1% | 2% | 2% | 4% | 37% | 56% |
| I feel comfortable talking to my child's teacher about my child | 1% | 1% | 2% | 6% | 48% | 43% |
| I enjoy talking to my child's teacher | 1% | 1% | 2% | 11% | 46% | 39% |
| I feel that my child's teacher pays attention to my suggestions | 3% | 1% | 3% | 22% | 44% | 28% |
| Feeling that culture is valued | Missing/don't know/prefer not to say | Very Dissatisfied | Dissatisfied | Neutral | Satisfied | Very Satisfied |
| How satisfied are you with the response of school to your <i>Growing Up in New Zealand</i> study child's Cultural needs | 1% | 0% | 3% | 22% | 44% | 30% |
| Feeling supported | Missing/don't know/prefer not to say | Very Dissatisfied | Dissatisfied | Neutral | Satisfied | Very Satisfied |
| How satisfied are you with the response of school to your <i>Growing Up in New Zealand</i> study child's Educational and learning needs | 1% | 0% | 2% | 4% | 47% | 46% |
| How satisfied are you with the response of school to your <i>Growing Up in New Zealand</i> study child's Physical needs | 1% | 0% | 2% | 7% | 51% | 39% |
| How satisfied are you with the response of school to your <i>Growing Up in New Zealand</i> study child's Social and emotional needs | 1% | 0% | 2% | 9% | 51% | 37% |

Constructing a learning partnership measure at 72 months

We used the items in Table 4 to construct our Learning Partnership measure at 72 months. Exploratory factor analysis supported a sound, single-factor solution that demonstrated strong factorial reliability, with high levels of internal consistency (Cronbach's alpha = 0.91), that was also well aligned with our framing of good Learning Partnerships.

Most mothers were generally very positive in ratings of their Learning Partnerships with school. Our 72-month Learning Partnership factor was therefore positively skewed with a clear ceiling effect (see Figure 1 below). Through re-scaling responses to range from 1–100 (as opposed to the original 1–5 scoring range) and by fitting a Partial Credit Rasch model, we were able to collapse responses into four categories for use in subsequent analyses for Research Questions 2 and 4.

Figure 1 Distribution of the 72-months Learning Partnership measure



Research Question 2: How are our measures of Learning Partnerships related to child and maternal aspects?

In this section we explore how the three proxy indicators of Learning Partnerships (at 54 months) and the Learning Partnership measure (at 72 months) relate to child and maternal characteristics.

Age 54 months

To answer this question, we included only the variables that had a statistically significant association with one or more of the three Learning Partnership indicators at 54 months. Table 5 below presents the regression models.

Overall, the models account for only small proportions of the variance between mothers on these three indicators, ranging from 12% for differences in the number of communications they had with their child's early learning service (ELS), to 1% for differences in levels of satisfaction with ELS's communication. One reason for this may be that there was not a wide range in maternal views.

We now look at each of the three indicators of Learning Partnership. Variations in **how many forms of communication with their child's ELS** were experienced by mothers had the most statistically significant associations. The higher maternal qualification levels were, the more forms of communication were experienced. Mothers of Pākehā children experienced more forms of communication than others, and mothers of Asian children experienced the least.

Mothers who participated in cultural activities, enjoyed a good work-life balance, and engaged with their child's learning at home, experienced more forms of communication with their child's ELS than mothers who did not. However, these differences were smaller than those associated with maternal qualifications and mother's ethnic group mentioned above.

Mainly speaking a language other than English at home was associated with fewer forms of communication with the child's ELS than those whose at-home language was English. Living in an area of high social deprivation (but not necessarily having high levels of personal maternal deprivation) was also associated with experience of fewer forms of communication. To a lesser extent, mothers with more authoritarian parenting values and those with more children than most tended to experience fewer forms of communication

Child performance on name and number tasks showed some association with how many forms of communication mothers reported experiencing. Children with higher scores on the name writing task, and to a lesser extent, on the counting down from 10 task, also had mothers who experienced more communication with their child's ELS than children with lower scores on these tasks.

When it comes to **maternal satisfaction with their ELS communications**, the patterns are different. Only a few variables show any significant associations.

Maternal security of cultural identity was positively related to levels of satisfaction, followed by higher levels of engaging with children's learning at home. Having work that negatively impacted on family/home life, and maternal material deprivation showed negative associations with levels of satisfaction.

Lastly, the modelling of mothers' **satisfaction with the ELS's contribution to development of their child's cultural awareness/belonging** shows some particularly interesting patterns.

The strongest association is with the child's ethnicity. Mothers of Asian children were less satisfied than mothers of non-Asian children with the ELS contribution to their child's development of cultural awareness, followed by mothers of Māori children, including those who were secure in their own cultural identity. Given that security of cultural identity otherwise had a somewhat stronger association with maternal satisfaction with the ELS's contribution to their child's development of cultural awareness, this may indicate that a strong Māori cultural identity increases maternal awareness of what this means, and therefore expectations of what ELS should provide.

The model also shows associations between maternal satisfaction with their child's ELS contribution to the development of:

- the child's cultural awareness/belonging and their level of participation in cultural activities
- level of parental engagement and support for their child, and
- their sense of belonging as a New Zealander.⁷

⁷ Mothers of Pākehā children had a significantly lower mean score on this measure than mothers of non-Pākehā children. Other than that, there were no other significant differences related to child's ethnicity.

Table 5 Results of regression models predicting Learning Partnership indicators at age 54 months

| Variable name | Linear model of counts of forms of ELS communication with mother | | Logistic model of maternal satisfaction with ELS contribution to development of child's cultural awareness/belonging | | Logistic model of maternal satisfaction with ELS communications | |
|--|--|------|--|------|---|------|
| | Unstandardised coefficient | S.E. | Unstandardised coefficient | S.E. | Unstandardised coefficient | S.E. |
| Intercept | 3.47*** | 0.20 | 1.34*** | 0.13 | 2.58*** | 0.15 |
| Participation in cultural activities | 0.23*** | 0.03 | 0.14** | 0.04 | | |
| Security of cultural identity | | | 0.34*** | 0.05 | 0.20** | 0.06 |
| Mainly speaking a language at home that is not English | -0.54*** | 0.13 | | | | |
| Sense of belonging as a New Zealander | 0.13*** | 0.03 | 0.16*** | 0.04 | | |
| Engagement with child's learning at home | 0.13*** | 0.03 | | | 0.15* | 0.06 |
| Parental encouragement and support for child | | | 0.17*** | 0.04 | | |
| Authoritarian parenting values | -0.17*** | 0.03 | | | | |
| Work positively affects family/home life | 0.14*** | 0.03 | | | | |
| Work interferes with family/home life | | | | | -0.25*** | 0.07 |
| Age at child's birth | 0.01* | 0.01 | 0.02** | 0.01 | 0.04** | 0.01 |
| Qualification: Diploma/certificate versus none | 0.58*** | 0.15 | | | | |
| Qualification: Bachelor's degree or higher versus none | 0.95*** | 0.16 | | | | |
| Material deprivation | | | | | -0.18** | 0.06 |
| NZDEP 8, 9, or 10 (versus those with NZDEP 3 or lower) | -0.24** | 0.08 | | | | |
| Maternal depression | | | -0.10** | 0.04 | | |
| Number of siblings living at home | -0.07* | 0.03 | | | | |
| Child's ethnicity: Asian | -0.56*** | 0.12 | -0.46*** | 0.11 | | |
| Child's ethnicity: Pākehā | 0.67*** | 0.09 | | | | |
| Child's ethnicity: Māori | | | -0.30** | 0.11 | | |
| Child score on task: 'Count down from 10' | 0.02* | 0.01 | | | | |
| Child score on task: 'My name is' | 0.08** | 0.03 | | | | |
| Child score on task: 'I can write numbers' | | | 0.07* | 0.04 | | |
| Mothers of Māori children who report security of cultural identity | | | -0.25** | 0.09 | | |
| R squared | 0.12 | | 0.04 | | 0.01 | |

Note 1: *** p-value < 0.001; ** p-value < 0.01, * p-value < 0.05.

Note 2: For the logistic models, the R-squared analogue reported is the coefficient of discrimination from Tjur (2009).

Age 72 months

Table 6 below gives the results of our analysis of the relationships between our Learning Partnership measure and child and maternal characteristics. Variables with significant associations are bolded. Variables we could not use because of missing data are underlined. Some of the variables in the table below are constructed from sets of GUiNZ items. The scales that make up these variables are described fully in Appendix 2.

Table 6 Learning Partnership measure associations with tested variables

| Variable | Description | Test type for association with LP measure | Significant associations ($p < 0.05$) with the 72-month measure of Learning Partnership |
|--|---|---|---|
| <i>Child variables</i> | | | |
| Ethnic group | European, Māori, Pacific, Asian, Other. | t-tests. | Mothers of Pākehā children have significantly higher mean Learning Partnership scores than mothers of non-Pākehā children. Mothers of Asian children have significantly lower mean scores than mothers of non-Asian children. Mothers of Māori children did not have significantly different mean scores from mothers of non-Māori children, and mothers of Pacific children did not have significantly different mean scores from mothers of non-Pacific children. |
| Gender | Female, male. | t-tests. | No significant association. |
| Age of child | Age in months. | Linear regression. | No significant association. |
| General health | Excellent; Very good; Good; Fair; Poor. | ANOVA. | Positive significant association. The more sound the child's general health, the higher the average scores on the Learning Partnership measure. |
| Child's special needs (measured at 54 months) | Hearing, vision, speech, behaviour, ASD, learning, mobility, growth/physical. | t-tests. | Mothers of children with vision needs had significantly lower Learning Partnership scores; other individual special needs were not significantly associated. |
| Concerns following B4 School check | No concerns were raised vs one or more concerns raised (54-months data). | t-test. | Mothers who indicated 'no concern raised' in the B4 School check had significantly higher scores on the Learning Partnership measure than those |

| Variable | Description | Test type for association with LP measure | Significant associations ($p < 0.05$) with the 72-month measure of Learning Partnership |
|---|---|--|--|
| | | | who indicated one or more concerns. |
| Developmental measures | DIBELS letter naming fluency, name and number task, parent-child interaction task. | ANOVA, linear regression. | Positive significant relationship. Mothers whose child had higher scores for counting backwards from 10 also had higher Learning Partnership scores. There was no association with the other developmental measures. |
| English spoken by the child | Yes, No. | <i>t</i> -test. | No significant association. |
| Maternal variables | | | |
| Highest qualification | None; Secondary school; Diploma/Trade Cert.; Bachelor's degree; Higher degree, from antenatal data. | ANOVA. | No significant association. |
| Maternal age at child's birth | Age in years. | Linear regression. | No significant association. |
| Language used at home | Language most commonly spoken at home. | Not analysed. | Language most commonly spoken at home was missing 69% of data so was not analysed. |
| Mainly speaks a language at home that is not English | Binary. | <i>t</i> -test. | Mothers who most commonly spoke a language at home that was not English had significantly lower Learning Partnership scores. |
| Cultural activities | 3 items from 54-months data. | Factor analysis and Rasch analysis to form a scale. Linear regression. | Positive significant association. The more often mothers shared cultural activities with their child, the higher the score on the Learning Partnerships measure. |
| Security of cultural identity | 12 items from 54-months data. | Factor and Rasch analysis to create a scale, then linear regression and <i>t</i> -tests. | Positive significant association with the Learning Partnerships measure: the more secure the cultural identity, the higher the score on the Learning Partnerships measure. |
| Sense of belonging as a New Zealander | 4 items from 54-months data. | ANOVA. | Positive significant association: the higher the scale score, the |

| Variable | Description | Test type for association with LP measure | Significant associations ($p < 0.05$) with the 72-month measure of Learning Partnership |
|--|-------------------------------------|---|--|
| | | Factor analysis and Rasch analysis to create one scale. Linear regression. | higher the score on the Learning Partnership measure. |
| Work and family responsibilities | 8 items from 54-months data. | Factor analysis and Rasch analysis to create two scales: work positively impacts on family/home life, and work interferes with family/home life. Linear regression. | Positive significant relationship with the scale 'work positively impacts on family/home life': the higher the score on this scale, the higher the score on the Learning Partnership measure. Negative significant relationship with the scale 'work interferes with family/home life'. The higher the score for the scale, the lower the Learning Partnership score. |
| Number of adults in the house | Total – 72-months data. | t-test. | No significant association with number of adults in the house (so no difference in Learning Partnership measure between one- and two-parent families or households that included more than a nuclear family). |
| Number of child's siblings living in the same house | Total – 72-months data. | ANOVA. | Significant, positive association with number of siblings in the same house. |
| Household income | Current total income for household. | | Missing data was too high (13.5%). This variable was not used in analyses. |
| Material hardship | 6 variables from 54-months data. | t-tests for individual deprivation variables, and linear regression for the sum of these variables. | The sum of the forms of deprivation had a negative significant association. The more deprivation, the lower the Learning Partnership score. |
| Deprivation index (NZDep2013) | Grouped: low, medium, high. | ANOVA. | Negative significant association, with mothers of children living in highly deprived areas having lower scores on the Learning Partnership measure. |
| Depression | 9 items from | t-tests for individual variables. | No significant association for any of the individual variables, but there was for the depression |

| Variable | Description | Test type for association with LP measure | Significant associations ($p < 0.05$) with the 72-month measure of Learning Partnership |
|---|---|---|---|
| | 54-months data covering feelings of exhaustion, depression, and negativity. | Factor analysis and Rasch analysis to create a scale, then linear regression. | scale: the higher the score on this scale, the lower the score on the Learning Partnership measure. |
| Effects of depression on daily life | One item from the 54-months data summarising the impact of the factors referred to in the Depression set. | ANOVA. | No significant association. |
| Authoritarian parenting values | 6 items from 54-months data. | Factor analysis and Rasch analysis to create a scale, then linear regression. | This scale had a positive significant association: more authoritarian parenting values were associated with higher scores on the Learning Partnership measure. |
| Parental encouragement and support for child | 8 items from 54-months data. | Factor analysis and Rasch analysis to create a scale, then linear regression. | This scale had a positive significant association: higher scores related to giving their child encouragement and support for their child were associated with higher scores on the Learning Partnership measure. |
| Self-efficacy and confidence around child's learning | 3 items from 72 months data. | Factor and Rasch analysis to create a scale, then linear regression. | These items formed a reasonable-quality scale, with a positive significant association. Mothers with higher scores for maternal self-efficacy and confidence around their child's learning had higher scores on the Learning Partnership measure. |
| Positivity about the school environment | 3 items from 72 months data. | Factor and Rasch analysis to create a scale, then linear regression. | These items formed a reasonable-quality scale, with a positive significant association. Mothers who were more positive had higher scores on the Learning Partnership measure. |
| Engagement with child's learning at home | 7 items from 54 months data. | Factor analysis and Rasch analysis to create a scale, then linear regression. | Positive significant association. Mothers who were more engaged with their child's learning at home had higher scores on the Learning Partnership measure. |

| Variable | Description | Test type for association with LP measure | Significant associations ($p < 0.05$) with the 72-month measure of Learning Partnership |
|--|--|--|--|
| Involvement in child's schooling | 8 items from 72-months data. | Linear regression for the count of types of involvement. | The count of types of involvement had a positive significant association: the greater the count, the higher the scores on the Learning Partnership measure at 72 months. |
| Forms of communication with ELS | Sum of indicators (derived) from 54-months data. This variable counts forms of communication. | t-tests for individual variables, linear regression for count of forms of communication. | Several of these individual variables (paper/electronic newsletters, notice board, learning story/portfolio/child profile book, social media) each had positive significant associations. The variable that summed the forms of communication with the early learning service also had a positive significant association. The more forms of communication, the higher the score on the Learning Partnership measure at 72 months. |
| Satisfaction with ELS communication | Very satisfied; Satisfied; Neither/nor; Dissatisfied; Very dissatisfied (54-months data). | ANOVA. | Positive significant association with Learning Partnership scores. Those who were satisfied had higher scores on the Learning Partnership measure. |
| Involvement with ELS | None, teaching, help with activities/trips, committees, training, fundraising/working groups (54-months data). | t-tests. | There were individual positive significant associations with 'help with activities/trips', 'committees', and 'fundraising/working groups'. There was a negative significant association with 'none'. |

Each variable in the table above that had a statistically significant association with the Learning Partnership measure was included in two linear regression models using a backward-elimination process, discarding the least statistically significant variable one by one until all the remaining variables were statistically significant.

Table 7 shows the results of these two linear regression models. The first model accounts for 8% of the variance between individual scores on the Learning Partnership scale. The second model accounts for 24% of this variance, a

marked increase due to the inclusion of the maternal variable *self-efficacy and confidence around child's learning*. Some of the strength of this variable in accounting for differences between individual scores on the Learning Partnership scale may be due to eight of the 12 items making up this scale being asked in the same bank of items from which the items in the *self-efficacy and confidence around child's learning* were taken.

Table 7 Learning Partnership scale at 72 months: Results of two linear regression models

| Variable | Model 1 | | Model 2 | |
|--|----------|------|----------|------|
| | b | SE | b | SE |
| Engagement with learning at home | 0.23*** | 0.01 | 0.10** | 0.01 |
| Parental encouragement and support for child | 0.16*** | 0.01 | 0.12*** | 0.01 |
| Authoritarian parenting values | 0.10** | 0.01 | 0.10** | 0.01 |
| Number of siblings at home (at least half the time) | 0.10*** | 0.01 | 0.10*** | 0.01 |
| Security of cultural identity | 0.10*** | 0.01 | 0.05** | 0.01 |
| sense of belonging as a New Zealander | 0.07*** | 0.01 | 0.05*** | 0.01 |
| Depression | -0.06** | 0.01 | -0.04* | 0.01 |
| Child has vision needs | -0.20* | 0.04 | -0.14 | 0.04 |
| Mainly speaks a language at home that is not English | -0.25** | 0.05 | -0.12 | 0.05 |
| Work interferes with family/home life | -0.26*** | 0.01 | -0.18*** | 0.01 |
| Child has Asian ethnicity | -0.45*** | 0.04 | -0.25*** | 0.04 |
| Self-efficacy and confidence around child's learning | | | 0.40*** | 0.01 |
| R² | 0.08 | | 0.24 | |

Note 1: * $p < .05$. ** $p < .01$. *** $p < .001$.

Note 2: We wondered whether the associations found for children with Asian ethnicity could be accounted for by mothers mainly speaking a language at home that was not the (school) language, English. However, there was no interaction between these two variables.

Note 3: In model 2, language and vision are no longer significant.

Note 4: Estimated coefficients (*b*) in the models above are unstandardised.

The picture that emerges from this modelling is that partnerships with their child's school are positively related to parents' own activities and communication with children in their engagement with learning at home. Security of cultural identity also plays a positive part. Consciousness of parental responsibility, whether exhibited in encouragement and support, or authoritarian parenting values, is also positively related to the level of maternal partnerships with their child's school. Higher levels on the partnership measure for those with more children at home may point to more experience in parenting, and more interactions with educational institutions.

Our analysis suggests that challenges for schools in forming or maintaining positive relations with mothers exist when work interferes with family life, with mothers of Asian children, and for those whose child's home language is usually not English.

Research Question 3: How are good Learning Partnerships related to maternal satisfaction with ELS and school readiness at age 54 months, and with satisfaction with school/kura at age 72 months?

To address Research Question 3, we hypothesised that good Learning Partnerships would positively predict maternal satisfaction with ELS and school readiness at 54 months, and satisfaction with school/kura at 72 months. To measure school readiness, we analysed children's performance on the developmental tasks described in Table 6. The items that contributed to the measure of maternal satisfaction with the effect of the educational institution on a child's learning include a wide range of desirable skills and capabilities (Tables 11 and 14 in Appendix 2). Children's performance was not measured in the 72-month GUI NZ phase.

We also hypothesised that good Learning Partnerships would mediate or account to some extent for the relationship between our maternal/child/contextual aspects (explored in Research Question 2) and the measures above at ages 54 and 72 months. We used the maternal, child, and contextual aspects that were significantly associated with Learning Partnerships in our models for Research Question 2 (Tables 5 and 7 respectively) with the addition of one variable, a count of the types of involvement in the child's ELS.

The final models presented below include only the variables that had a statistically significant relationship with either or both of our mediating and model outcome variables.

Age 54 months

We chose to include the count of communication forms in our model here, because the modelling for research question 2 showed that it accounted for more variance than the two other indicators of Learning Partnerships at age 54 months. Also, our exploratory factor analysis for Research Question 1 showed that it was not possible to form a reliable 3-item factor from the three Learning Partnership indicators at 54 months.

Figure 2 shows that the more forms of communication mothers indicated using, the more they were satisfied with the effect ELS is having on their child's learning and development.

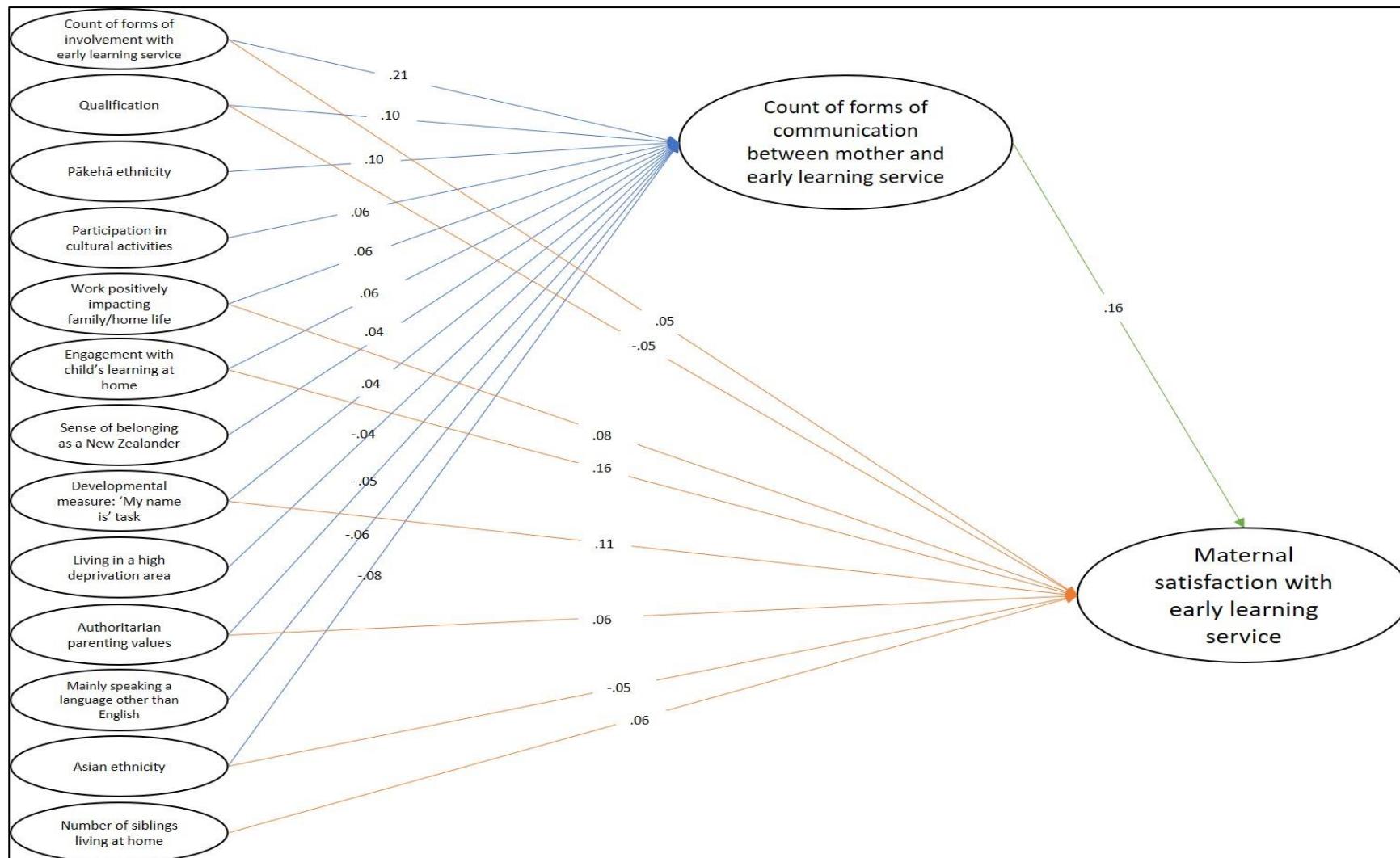
Although most of the maternal/child/contextual factors significantly predicted how many forms of communication mothers used, they were mainly weak predictors, explaining little variance. Mothers' involvement with ELS activities was the strongest Learning Partnership indicator: the more involved mothers were in ELS activities, the more forms of communication they reported using.

But the count of forms of maternal involvement was less directly associated with maternal satisfaction with the ELS.

Other variables show more contribution to maternal satisfaction levels than they do to how many forms of communication are used, such as engagement with the child's learning at home. And some variables show more contribution to the count of forms of communication than to maternal satisfaction, such as living in a high deprivation area or speaking a language other than English.

We found differential patterns for mothers of Pākehā and Asian children, but not for mothers of Māori or Pacific children. Mothers of Pākehā children had more forms of communication with their child's ELS but having a Pākehā child did not contribute over and above that to maternal satisfaction levels. Mothers of Asian children had fewer forms of communication with their child's ELS. Being the mother of an Asian child was also independently linked to maternal satisfaction levels.

Figure 2 Relations between child/maternal/contextual factors, 54-month Learning Partnership indicator, and maternal satisfaction with ELS at 54 months



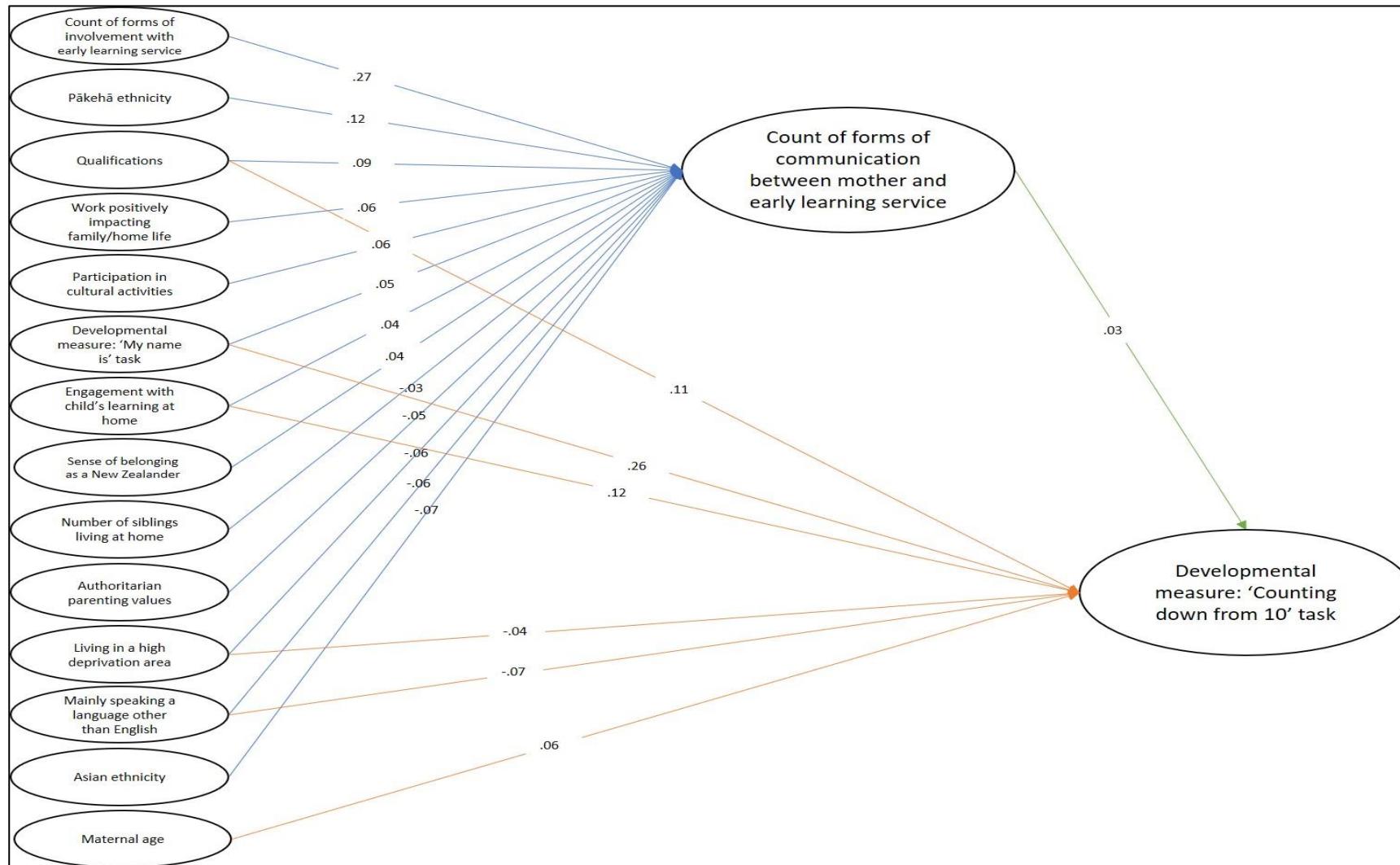
Note1: Model fit indicates acceptable levels of reliability (Chi-Square/df = 1.659, p > .05; CFI = .998; TLI = .987; Gamma Hat = .999; SRMR = .003; RMSEA = .012).

Figure 3 shows that the count of forms of communication between mothers and their children's ELS, as a Learning Partnership indicator at 54 months, is a positive but very weak predictor of the child's performance on the developmental task 'Counting down from 10'. The more forms of communication mothers indicated with their ELS, the very slightly better their child's performance on this number task. Therefore, this Learning Partnership indicator does not seem to mediate or make a difference to the relationship between our child/maternal/contextual factors and the developmental task. This suggests that our indicator of Learning Partnerships (i.e., count of forms of communication) at 54-months (albeit statistically significant) may not have a measurable or substantial direct impact on our measure of school readiness (i.e., the developmental task 'Counting down from 10').

Instead, the variables significantly associated with children's performance on the developmental task 'Counting down from 10' were: their performance on the developmental task 'My name is', followed by maternal characteristics and resources, particularly engagement with child's learning at home, and maternal qualification. This suggests that these variables may be more related to our measure of school readiness than our indicator of Learning Partnerships at 54-months. Although it is important to note that the variables ('My name is' task and maternal characteristics and resources) were still only weakly associated with our school readiness measure.

Ethnicity, identity, parenting values, work-life balance and involvement with the child's ELS were not related to the child's performance on the developmental task 'Counting down from 10'.

Figure 3 Relations between child/maternal/contextual factors, 54-month Learning Partnership indicator, and 'Counting down from 10' task at 54 months



Note1: Model fit indicates acceptable levels of reliability (Chi-Square/df = 1.191, $p > .05$; CFI = .999; TLI = .997; Gamma Hat = .999; SRMR = .003; RMSEA = .006).

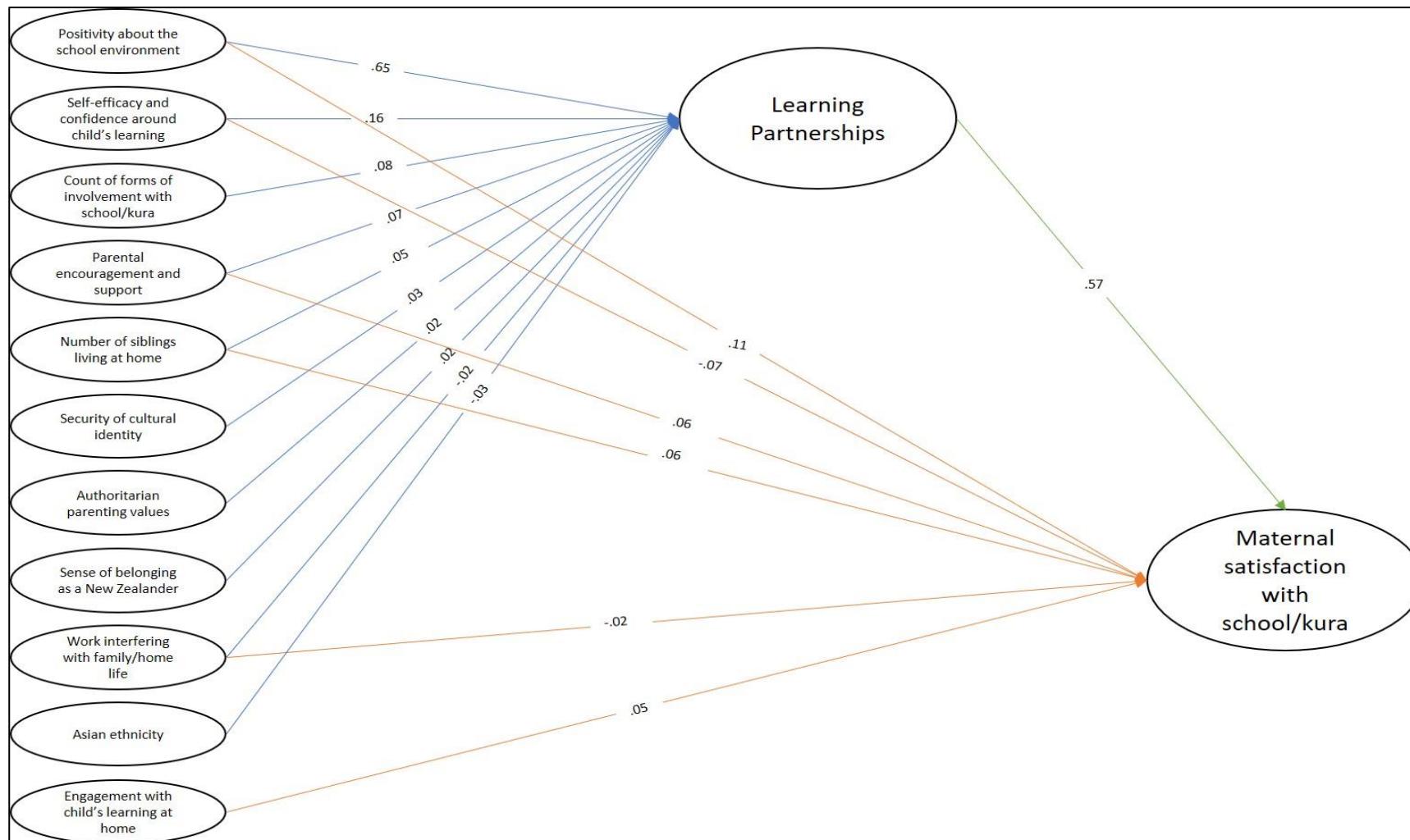
Age 72 months

Figure 4 shows that our Learning Partnership measure at 72 months is a positive and very strong predictor of maternal satisfaction with the effect her child's school/kura is having on their learning. The stronger the Learning Partnership, the more satisfied mothers were about the effect school/kura is having on their child's learning.

Maternal positivity about the school environment and their own self-efficacy and confidence around their child's learning showed the strongest contribution to the Learning Partnerships measure, and much weaker relations with maternal satisfaction with their child's school/kura once Learning Partnerships were considered. All other variables in the 72-month model are very weak predictors of our Learning Partnership measure and/or maternal satisfaction levels.

In this model, ethnicity was only and very weakly apparent as a contributor to Learning Partnerships, for mothers of Asian children, and not to maternal satisfaction with school/kura.

Figure 4 Relations between child/maternal/contextual factors, 72-month Learning Partnership measure, and maternal satisfaction with school/kura at 72 months



Note1: Model fit indicates acceptable levels of reliability (Chi-Square/df = 0.870, $p > .05$; CFI = .999; TLI = .999; Gamma Hat = .999; SRMR = .002; RMSEA = .001).

Research Question 4: Is there continuity of good Learning Partnerships between early learning services and school?

To answer this question, we cross-tabulated the two 54-months indicators of Learning Partnerships that were scored on an ordinal scale with our 72 months Learning Partnership measure.

Continuity is evident for those with high levels of satisfaction at 54 months. Most of those with low levels of satisfaction at 54 months did not have low ratings on the 72-month Learning Partnership measure.

There was considerable continuity in Learning Partnerships across both 54 months and 72 months for the 5,043 mothers who were satisfied with their ELS communication: Table 8 shows 94% of these mothers had high or very high levels on the 72-month Learning Partnership measure.

For the 267 who had been neutral or dissatisfied about their ELS communication, 86% now had high or very high levels on the 72 months Learning Partnership measure. Only 14% remained with low or very low levels.

Table 8 Continuity in maternal views of ELS and school–ELS communication

| Mothers' satisfaction with communication with ELS at 54 months | | | | | |
|--|------------------------|------------|-----------|------------|-------|
| Level on Learning Partnership measure at 72 months | Dissatisfied + neutral | | Satisfied | | Total |
| | n | Percentage | n | Percentage | |
| Very low | 24 | 9% | 156 | 3% | 180 |
| Low | 13 | 5% | 149 | 3% | 162 |
| High | 182 | 68% | 2924 | 58% | 3106 |
| Very high | 48 | 18% | 1814 | 36% | 1862 |

Table 9 gives a similar picture for the 4,346 mothers who were satisfied with the ELS contribution to their child's cultural awareness/belonging: 94% of those who were satisfied with this had high or very high levels on the 72-month Learning Partnerships measure.

For the 951 mothers who had been neutral or dissatisfied with the ELS contribution to their child's cultural awareness/belonging, 91% now had high or very high levels on the 72-months Learning Partnership measure. Only 10% remained with low or very low levels.

Table 9 Continuity in maternal views of ELS and school – ELS contribution to child's cultural awareness/belonging

| Mother's satisfaction with the contribution of ELS to their child's cultural awareness | | | | | |
|--|------------------------|------------|-----------|------------|-------|
| Level on Learning Partnership measure at 72 months | Dissatisfied + neutral | | Satisfied | | Total |
| | n | Percentage | n | Percentage | |
| Very low | 53 | 6% | 125 | 3% | 178 |
| Low | 35 | 4% | 126 | 3% | 161 |
| High | 614 | 65% | 2483 | 57% | 3097 |
| Very high | 249 | 26% | 1612 | 37% | 1861 |

The Learning Partnerships measure at 72-months is broader than the two indicators used for ELS, and we may have found more continuity for those had neutral or dissatisfied views on these indicators had we analysed just the related components of the 72-months measure for each indicator.

Is continuity of Learning Partnerships related to aspects of the transition to school or other variables related to child or mother?

Next, using cross tabulations and chi-square tests, we explored whether these patterns of continuity between the indicator of satisfaction with ELS communication, and the 72-month Learning Partnership measure were related to the transition to school and a set of other potential variables.

Nineteen percent of the mothers who did not find their child's **transition experience** 'fine' were dissatisfied with ELS communication at 54 months and had low or very low levels on the Learning Partnership measure at 72 months. This compares with 11% of mothers with more positive views of their child's transition experience who were dissatisfied with ELS communication at 54 months and who also had low or very low levels on the Learning Partnership measure at 72 months.

Nineteen percent of mothers who reported less positive views of **school readiness** for their child were dissatisfied with ELS communication at 54 months and had low or very low levels on the Learning Partnership measure at 72 months. This compares with only 8% of the mothers who reported more positive views of school readiness for their child being both dissatisfied with ELS communication at 54 months and having low or very low levels on the Learning Partnership measure at 72 months.

We also found maternal satisfaction with the ELS effect on their child's development to be related—although to a weak extent—to the continuity of their

views of Learning Partnerships. We note here that differences of 5% or less are marginal and should be interpreted as such. This is especially given the small numbers of mothers who reported dissatisfaction with ELS communication at 54 months and had low or very low levels on the Learning Partnership measure at 72 months.

Sixteen percent of mothers who reported dissatisfaction in relation to the ELS's effect on their **child's independence** were dissatisfied with ELS communication at 54 months and had low or very low levels on the Learning Partnership measure at 72 months. This compares with 13% of mothers who reported satisfaction in relation to their ELS effect, but also reported dissatisfaction with ELS communication at 54 months and had low or very low levels on the Learning Partnership measure at 72 months.

Fifteen percent of mothers who reported dissatisfaction in relation to the ELS effect on their **child's social skills** were dissatisfied with ELS communication at 54 months and had low or very low levels on the Learning Partnership measure at 72 months. This compares with 11% of mothers who reported satisfaction in relation to their ELS effect, but also reported dissatisfaction with ELS communication at 54 months and had low or very low levels on the Learning Partnership measure at 72 months.

We found no significant shifts in the overall levels of continuity in relation to:

- Involvement with child's ELS
- Child's ethnicity
- Mainly speaking a language that is not English at home
- Living in a high deprivation area
- Work positively impacting family/home life
- Work interference with family/home life
- Maternal qualification
- Engagement with child's learning: Telling stories
- Engagement with child's learning: Singing to child
- Engagement with child's learning: Encouraging child to recognise numbers
- Engagement with child's learning: Encouraging child to read words
- Engagement with child's learning: Encouraging child to print letters, words, or numbers
- Engagement with child's learning: Encouraging child to print letters, words, or numbers
- Engagement with child's learning: Reading books to child
- Engagement with child's learning: Encouraging child to count
- Maternal satisfaction with ELS effect on child's language and communication skills.

Discussion

This report provides the first large-scale analysis of maternal perceptions of some key aspects of Learning Partnerships in the last year of early learning, and at the end of the first year of schooling in Aotearoa New Zealand using the GUiNZ data set. Because GUiNZ collected a wide range of data, the analysis offers new understanding of how views of Learning Partnerships are related to important social characteristics such as ethnicity and also to maternal experiences, values, and perceptions.

Most mothers were positive about the aspects of Learning Partnerships included in GUiNZ. This is a heartening finding, given that family/whānau–educator partnership is increasingly emphasised in policy, and good communication and relationships have been found in previous research to be linked with student belonging in schools and achievement.

Our analysis identified some maternal and child aspects that helped explain how mothers formed their views of their Learning Partnership. It is worth noting that most of the aspects that were related to these views are maternal: they were not associated, for example, with children's health or concerns following the B4 School check.

Our overall statistical models accounted for a relatively small amount of variance in maternal views because these views were not widely diverse. The patterns for ELS and school/kura are somewhat different, and these differences are likely due to both differences in parental expectations for ELS and school/kura and because the measures we could construct from the data are not identical.

However, at both stages, Asian ethnicity and speaking a language other than English are markedly associated with lower levels on our measures of parent–educator Learning Partnerships. Other factors that also account for differences in maternal views include affinity with one's culture, cultural aspects, parental engagement with their child's learning at home, the balance of work and family life, and their encouragement and support for their child, or their holding authoritarian parenting values. Maternal self-efficacy and confidence around their child's learning is a strong feature in maternal views of Learning Partnership at 72 months.

Mothers of Pākehā children generally gave higher ratings of the Learning Partnership with school/kura. Mothers of Māori children gave lower ratings to their ELS development of their child's cultural awareness/belonging. Studies of Māori success show that children benefit when educators understand and respect what they bring to the ELS or school/kura, and work with whānau knowledge and involve them in decision-making. The finding here supports the stronger direction in government policy and support to improve ELS and school capability to work better in partnership with Māori whānau. In this study, Pacific ethnicities were not found to be related to maternal views of Learning Partnerships.

Generally, prior research has found that children benefit when their parents feel that there is good communication and support for them in their role. We chose the count of forms of communication to model because it accounted for more of the variance than did satisfaction with communication. Our modelling of maternal satisfaction with their child's ELS showed some linkage with how many ways they communicated with their child's ELS, but it was not a strong link. Nor did we find a strong link between maternal satisfaction with the ELS and child performance on a developmental measure.

Our more comprehensive measure of Learning Partnerships at the end of the first year of school did show a reasonably strong relationship with maternal satisfaction with the school/kura. This underlines the value of policy settings and support for schools to communicate with and meaningfully involve parents and whānau in the work of the ELS or school. Schools on their own cannot do much about parents' work situations, but they can use flexible forms of communication; they can share and receive information and build understanding of child performance and curriculum that also nourishes maternal self-efficacy and confidence, and enhance the encouragement and support they give their child. Schools can also find ways to encourage parents to work with them to improve the school's cultural inclusiveness. However, without additional resources it may be hard for an individual school to reach parents whose home language is other than English.

We have found that almost all mothers who had positive views of their child's ELS went on to have positive views of their child's school—as did the majority of those who had less positive views of their child's ELS. This suggests that while experiences of communicating with their child's ELS can develop knowledge and confidence that is useful in the later maternal-school partnership, the quality of the maternal-school partnership is also reliant on what schools do to fostering parental partnership.

Limitations and future directions

We are mindful that this analysis can only show maternal perspectives, since that was the data collected in the GUiNZ project. Ideally, a study of maternal-educational institution partnerships revolving around a child would include the educational institution's perspective, and the child's perspective.

While we are interested in the perspectives of fathers, those data were not collected. Most research in this area has focused on maternal relationships, and we know that mothers are still those who usually have prime responsibility for children—particularly in single-parent families—and they are usually the most responsive to educational surveys.

We are also mindful that the data we have in GUiNZ relates only to maternal relationships with the education institutions. Much of the policy direction is now appropriately focused on a broader and deeper definition of family and whānau engagement with the education institution and children's learning that is more inclusive of all cultures.

Ideally, the data collected on Learning Partnerships would also have been the same at both the 54- and 72-month stages, allowing direct comparisons of the two educational levels. However, we are mindful that GUiNZ was not set up to enable a specific study of Learning Partnerships. Further, we had more information to use at the 72-month stage than the 54-month stage. On the one hand, that allowed us to have a richer single measure of Learning Partnerships. On the other hand, the very interesting patterns we found for Māori mothers in relation to their judgement of how well the ELS contributed to the development of their child's cultural awareness/belonging raised a question of what we would have found at 72 months had we analysed the component of the 72-month Learning Partnership measure relating to 'feeling culture is valued'.

Our models were not able to account for much variance between maternal perspectives, but that was largely because mothers were largely positive about their child's ELS or school.

Our 72-month measure of Learning Partnership could be used to inform future analysis of GuiNZ data on student performance and views about their learning and wellbeing at school to ascertain the longer-term contribution that aspects of Learning Partnerships make. It would also be useful to include measures of Learning Partnerships in future GUiNZ waves to see if they remain stable over time, and also to see what associations they have with children's and young people's learning and negotiation through adolescence.

Our work also suggests the value of deeper qualitative studies into particular aspects; for example, how ELS and schools can work well with mothers of Asian children, and those whose home language is other than English, and how ELS and schools work productively with parents to enhance the latter's engagement

with their child's learning at home, and their self-efficacy and confidence around their child's learning.

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Appendices

Appendix 1: Social characteristics of the dataset used for analysis and the full 72-month GUINZ dataset

| Characteristic | 72-month participants (N = 5,709) | Analysis dataset (N = 5,528) | Characteristic | 72-month participants (N = 5,709) | Analysis dataset (N = 5,528) |
|---|-----------------------------------|------------------------------|----------------------------|-----------------------------------|------------------------------|
| Maternal age group | | | | | |
| < 20 years | 4% | 3% | Low (deciles 1-3) | 30% | 31% |
| 20-29 years | 36% | 36% | Medium (deciles 4-7) | 34% | 36% |
| 30-39 years | 55% | 56% | High (deciles 8-10) | 29% | 29% |
| 40+ years | 4% | 5% | Missing information | 7% | 5% |
| Missing information | 1% | 0% | | | |
| Maternal ethnic group | | | | | |
| European | 67% | 69% | European | 68% | 70% |
| Māori | 17% | 17% | Māori | 24% | 24% |
| Pacific people | 13% | 13% | Pacific people | 18% | 18% |
| Asian | 15% | 15% | Asian | 16% | 16% |
| MELAA/Other/NZ | 4% | 4% | MELAA/Other/NZ | 18% | 19% |
| Missing information | 1% | 0% | Missing information | 2% | 0% |
| Maternal Education | | | | | |
| None | 5% | 5% | Female | 49% | 49% |
| Secondary qualification | 21% | 21% | Male | 51% | 51% |
| Diploma | 30% | 30% | Missing information | 0% | 0% |
| Bachelor degree | 25% | 25% | | | |
| Higher degree | 17% | 18% | Child special needs | | |
| Missing information | 1% | 0% | Special needs | 25% | 25% |
| Maternal material hardship count | | | | | |
| Zero | 62% | 61% | No special needs | 68% | 68% |
| One | 20% | 20% | Missing information | 8% | 7% |
| Two | 8% | 8% | | | |
| Three | 4% | 4% | | | |
| Four or more | 6% | 6% | | | |
| Missing information | 0% | 0% | | | |

Appendix 2: Variable scales created for analysis

Table 1 presents items used to measure child-mother cultural activities (Cronbach's alpha $\alpha = 0.83$). Higher values on the scale indicated more frequent engagement with cultural activities.

Table 1: Cultural activities (54-months dataset). How often do you ...

| Items |
|--|
| 1. Read to {name} about {his/her} ethnicity or culture |
| 2. Listen to your own ethnic or cultural music with {name} |
| 3. Attend your own ethnic or cultural celebrations with {name} |

Note: Response options are never; rarely; sometimes; often; very often.

Table 2 presents a 12-item scale measuring mother's security of cultural identity (Cronbach's alpha $\alpha = 0.89$). Higher values on the scale indicate more secure cultural identity.

Table 2: Security of cultural identity—scale items (54-months dataset).

| Items |
|--|
| 1. I have spent time trying to find out more about my ethnic or cultural group, such as its history, traditions, and customs |
| 2. I am active in organisations or social groups that include mostly members of my own ethnic or cultural group |
| 3. I have a clear sense of my ethnic or cultural background and what it means for me |
| 4. I think a lot about how my life will be affected by my ethnic or cultural group membership |
| 5. I am happy that I am a member of the ethnic or cultural group I belong to |
| 6. I have a strong sense of belonging to my own ethnic or cultural group |
| 7. I understand pretty well what my ethnic or cultural group membership means to me |
| 8. In order to learn more about my ethnic or cultural background, I have often talked to other people about my ethnic group |
| 9. I have a lot of pride in my ethnic or cultural group |
| 10. I participate in cultural practices of my own ethnic or cultural group, such as special food, music, or customs |
| 11. I feel a strong attachment towards my own ethnic or cultural group |
| 12. I feel good about my ethnic or cultural background |

Note: Responses are scored on 5-point Likert scale: *Strongly agree, agree, neither agree nor disagree, disagree, strongly disagree.*

Table 3 shows a 4-item scale measuring maternal sense of belonging as New Zealanders. Higher values on the scale indicated stronger sense of belonging as a New Zealander. This scale yielded marginal levels of internal consistency (Cronbach's alpha $\alpha = 0.66$).

Table 3: Sense of belonging as a New Zealander (54-months dataset).**How much do you agree or disagree with the following statements:**

| Items |
|--|
| 1. I think of myself as a New Zealander |
| 2. I feel I am a part of New Zealand culture |
| 3. I am proud of being a New Zealander |
| 4. I am happy to be a New Zealander |

Note: Responses are scored on 5-point Likert scale: *Strongly agree, agree, neither agree nor disagree, disagree, strongly disagree.*

Table 4 below shows items measuring work and family responsibilities. We found two subscales measured. The first subscale consists of four items measuring the extent to which work positively impacts family/home life (Cronbach's alpha $\alpha = 0.95$). The second subscale consists of four items measuring the extent to which work negatively impacts or interferes with family/home life (Cronbach's alpha $\alpha = 0.95$). One item did not load on either subscales and was discarded from the analysis.

Table 4: Work and family responsibilities (54-months dataset)**How much do you agree or disagree with the following statements:**

| Items |
|---|
| Work positively impacting family/home life |
| 1. My work has a positive effect on my children and my family life generally |
| 2. Working makes me a better parent |
| 3. Having both work and family responsibilities makes me a more well-rounded person |
| 4. Managing work and family responsibilities makes me feel competent |
| Work interfering with family/home life |
| 1. Because of the requirements of my job I miss out on home or family activities I would prefer to participate in |
| 2. Work leaves me with too little time or energy to be the kind of parent I want to be |
| 3. Thinking about the children interferes with my life at work |
| 4. Because of my family responsibilities I have to turn down work activities or opportunities I would prefer to take on |

Note: Responses are scored on 7-point Likert scale: *Strongly disagree, moderately disagree, mildly disagree, neutral, mildly agree, moderately agree, strongly agree.*

Table 5 presents the set of items used to create a variable that represented the sum of indicators related to material hardship that a mother indicated they experienced. Higher scores on this variable indicates higher levels of experiencing material hardship.

Table 5: Material hardship (54-months dataset)

In the last 12 months have you personally ...

Items

1. been forced to buy cheaper food so that you could pay for other things you needed
2. put up with feeling cold to save heating costs
3. made use of special food grants or food banks because you did not have enough food
4. continued wearing shoes with holes because you could not afford replacements
5. gone without fresh fruit and vegetables often, so that you could pay for other things you needed
6. received help in the form of food, clothes or money from a community organisation (like the Salvation Army)

Note: Responses are scored on a Yes/No scale.

Table 6 below reveals a 9-item scale measuring overall maternal negative feelings (Cronbach's alpha $\alpha = 0.98$). Higher values on the scale indicated more negative feelings.

Table 6: Depression (54-months dataset)

Over the last two weeks, how often have you been bothered by the following problems:

Items

1. Little interest or pleasure in doing things
2. Feeling down, depressed, or hopeless
3. Trouble falling or staying asleep, or sleeping too much
4. Feeling tired or having little energy
5. Poor appetite or overeating
6. Feeling bad about yourself – or that you are a failure or have let yourself or your family down
7. Trouble concentrating on things, such as reading the newspaper or watching television
8. Moving or speaking so slowly that other people could have noticed. Or the opposite – being so fidgety or restless that you have been moving around a lot more than usual
9. Thoughts that you would be better off dead or hurting yourself in some way

Note: Responses are scored on 4-point Likert scale: *Not at all; several days; more than half the days; nearly every day.*

Table 7 shows the 8 items measuring encouragement and support from parents. (Cronbach's alpha $\alpha = 0.82$). Higher values on the scale indicate more encouragement and support from parents.

Table 7: Parental encouragement and support for child – scale items (54-months dataset)

| Items |
|---|
| 1. I encourage {him/her} to talk about {his/her} troubles |
| 2. I give praise when {he/she} is good |
| 3. I show sympathy if {he/she} is hurt or frustrated |
| 4. I give comfort and understanding when {he/she} is upset |
| 5. I am responsive to {his/her} feelings and needs |
| 6. I tell {him/her} that I appreciate what they try to accomplish |
| 7. I express affection by hugging, kissing, and holding {him/her} |
| 8. I apologise to {him/her} when I make a mistake in parenting |

Note: Responses are scored on 5-point Likert scale: *Strongly agree, agree, neither agree nor disagree, disagree, strongly disagree.*

Table 8 presents a 6-item scale measuring authoritarian parenting values (Cronbach's alpha $\alpha = 0.74$). Higher values on the scale indicate more 'strict/traditional' parenting values.

Table 8: Authoritarian parenting values – scale items (54-months dataset)

| Items |
|---|
| 1. There should be a clear line of authority within the family and no doubt about who decides |
| 2. Children should obey their parents |
| 3. Parents should teach their children to behave properly |
| 4. Children should not talk back to their parents |
| 5. It is a child's responsibility to look after the parents when they need help |
| 6. Parents always know what is best |

Note: Responses are scored on 5-point Likert scale: *Strongly agree, agree, neither agree nor disagree, disagree, strongly disagree.*

Table 9 presents a 3-item scale measuring maternal self-efficacy (Cronbach's alpha $\alpha = 0.81$). Higher values on the scale indicate higher self-efficacy and confidence around a child's learning.

Table 9: Maternal self-efficacy and confidence around child's learning—scale items (72-months dataset)

| Items |
|---|
| 1. I know how to help my child do well at school |
| 2. I think I can make a difference to my child's success at school |
| 3. I am able to help my child at home with schoolwork that is difficult |

Note: Responses are scored on 5-point Likert scale: *Strongly agree, agree, neither agree nor disagree, disagree, strongly disagree.*

Table 10 presents a 7-item scale measuring mother's engagement with child's learning at home (Cronbach's alpha $\alpha = 0.91$). Higher values on the scale indicate higher engagement with the child's learning at home.

Table 10: Mother's engagement with child's learning at home—scale items (54-months dataset)

| Items |
|---|
| 1. How often do you tell stories to {name}? Do not include reading books |
| 2. How often do you read books with {name}? |
| 3. How often do you sing songs or play music with {name}? |
| 4. How often do you encourage {name} to print letters, words, or numbers? |
| 5. How often do you encourage {name} to read words? |
| 6. How often do you encourage {name} to count? |
| 7. How often do you encourage {name} to recognise numbers? |

Note: Responses are scored on 5-point Likert scale: *Several times a day, once a day, several times a week, once a week, seldom or never.*

Table 11 presents the set of items used to create a variable that represented the sum of ways mothers were involved in their child's schooling. Higher scores on this variable indicate higher levels of involvement in their child's schooling.

Table 11: Involvement in child's schooling (72-months dataset).

What forms of involvement do you have with your GUiNZ study child's school?

| Items |
|--|
| 1. None |
| 2. Regular supervising |
| 3. Helping with or attending activities, trips and special events |
| 4. Serving on committees or the school board |
| 5. Supporting through fund raising, working groups, providing supplies or cleaning |
| 6. Attending progress reports/meetings with teacher(s) |
| 7. Coaching or helping with sports teams or other activities |
| 8. I work there |

Note: Responses are scored on a Yes/No scale.

Table 12 presents the nine items that formed the maternal satisfaction scale (Cronbach's alpha $\alpha = 0.91$). Higher values on the scale indicate higher levels of satisfaction with the effect school is having on the GUiNZ child.

Table 12: Satisfaction with school (72-months dataset).

How satisfied are you with the effect school is having on your GUiNZ study child's/children?

| Items |
|--|
| 1. Independence |
| 2. Social skills: playing, joining in, relationships with others |
| 3. Development of language and communication |
| 4. Writing/writing skills |
| 5. Reading/reading skills |
| 6. Skills with numbers |
| 7. Physical or motor skills |
| 8. Interest in music or singing |
| 9. Interest in learning and exploring |

Note: Responses are scored on a 5-point Likert scale: *Very satisfied, satisfied, neither satisfied nor dissatisfied, dissatisfied, very dissatisfied.*

Table 13 presents a 3-item scale measuring mother's thoughts and feelings about the school environment (Cronbach's alpha $\alpha = 0.88$). Higher values on the scale indicate more positive thoughts and feelings.

Table 13: Positivity about the school environment—scale items (72-months dataset)

| Items |
|---|
| 1. I think that my child/children feel/'s like their school is a good place to be |
| 2. I think that my child/children feel/'s like they belong in their school |
| 3. I feel the staff at my child/children's school are doing good things for my child/children |

Table 14 presents a 10-item scale measuring mother's satisfaction with the effect of the ELS (Cronbach's alpha $\alpha = 0.89$). Higher values on the scale indicate greater satisfaction.

Table 14: Satisfaction with the effect of the ELS on child's development—scale items (54-months dataset)

How satisfied are you with the effect that this early childhood education or care arrangement has had on your child/children?

| Item |
|--|
| 1. independence |
| 2. social skills: playing, joining in, relationships with others |
| 3. development of language and communication |
| 4. development of cultural awareness and/or belonging |
| 5. pre-writing/writing skills |
| 6. pre-reading/reading skills |
| 7. skills with numbers |
| 8. physical or motor skills |
| 9. interest in music or singing |
| 10. interest in learning and exploring |

Table 15 presents forms of mother's involvement with the ELS (with "none" not contributing to the count).

Table 15: Forms of involvement with the ELS—scale items (54-months dataset)

| | N | % |
|--|------|-----|
| None | 1664 | 32% |
| Teaching or supervising | 398 | 8% |
| Help with or attend activities, trips and special events | 3018 | 58% |
| Serve on committees | 451 | 9% |
| Training or course work | 144 | 3% |
| Support through fund raising, working groups, providing supplies or cleaning | 1739 | 33% |

Note: A total of 168 (3%) of responses were missing.

Appendix 3: List of the variables that were included and those that were excluded from our final model due to weak or non-significant associations

Table 1: List of variables that were included/excluded in the analysis for Research Questions 2 and 3

| Variable | Significant association with Learning Partnership (54 or 72 months) in Research Question 2 | Inclusion/Exclusion from modelling in Research Question 3 | Significant direct and indirect associations with Learning Partnership (54 or 72 months), maternal satisfaction with ELS or school/kura, or developmental tasks in Research Question 3 |
|--|--|---|--|
| CHILD VARIABLES | | | |
| Child gender | No association | Excluded | N/A |
| Child age | No association | Excluded | N/A |
| Child general health | No association | Excluded | N/A |
| No health or developmental concerns raised about child | No association | Excluded | N/A |
| Child spoken language: English | No association | Excluded | N/A |
| Child score on task: 'Count up to 10' | No association | Excluded | N/A |
| Child score on DIBELS task | No association | Excluded | N/A |
| Child score on PCI task | No association | Excluded | N/A |
| Concern about child's vision raised | Significant association | Included | No association |
| Child score on task: 'I can write numbers' | Significant association | Included | No association |
| Child ethnicity | Significant association | Included | Significant association |
| Child score on task: 'Count down from 10' | Significant association | Included | Significant association |
| Child score on task: 'My name is' | Significant association | Included | Significant association |
| MATERNAL VARIABLES | | | |
| Maternal age | No association | Excluded | N/A |
| Language commonly used at home | No association | Excluded | N/A |
| Number of adults living at home | No association | Excluded | N/A |
| Household income | Not analysed | Excluded | N/A |
| Depression | Significant association | Excluded | N/A |
| Material deprivation | Significant association | Included | No association |
| Satisfaction with ELS communication | Significant association | Included | No association |

| Variable | Significant association with Learning Partnership (54 or 72 months) in Research Question 2 | Inclusion/Exclusion from modelling in Research Question 3 | Significant direct and indirect associations with Learning Partnership (54 or 72 months), maternal satisfaction with ELS or school/kura, or developmental tasks in Research Question 3 |
|--|---|--|---|
| Qualifications | Significant association | Included | Significant association |
| Mainly speaking a language at home that is not English | Significant association | Included | Significant association |
| Participation in cultural activities | Significant association | Included | Significant association |
| Security of cultural identity | Significant association | Included | Significant association |
| Sense of belonging as a New Zealander | Significant association | Included | Significant association |
| Work positively impacts family/home life | Significant association | Included | Significant association |
| Work interference with family/home life | Significant association | Included | Significant association |
| Number of siblings living at home | Significant association | Included | Significant association |
| Deprivation index | Significant association | Included | Significant association |
| Authoritarian parenting values | Significant association | Included | Significant association |
| Encouragement and support for child | Significant association | Included | Significant association |
| Self-efficacy and confidence around child's learning | Significant association | Included | Significant association |
| Positivity about the school environment | Significant association | Included | Significant association |
| Engagement with child's learning at home | Significant association | Included | Significant association |
| Count of forms of maternal involvement with school/kura | Significant association | Included | Significant association |
| Satisfaction with school/kura effect on child's learning | Significant association | Included | Significant association |
| Count of the forms of communication with ELS | Significant association | Included | Significant association |
| Satisfaction with ELS contribution to child's learning | Significant association | Included | Significant association |
| Count of the forms of maternal involvement with ELS | Significant association | Included | Significant association |

Note 1: Only variables that had a significant association in Research Question 2 were included in the analysis for Research Question 3.

Note 2: Household income was not analysed due to the high percentage of missing data.

