Technical Appendix

Footprints in Time: The Longitudinal Study of Indigenous Children (LSIC) Early Childhood Report

This document is a Technical Appendix to the Report which can be found and cited as:

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* These authors shared the leadership of this Report.

1.0 Restructuring of LSIC Assessment Waves into Developmental Periods

The Early Childhood Report for *Footprints in Time:* The Longitudinal Study of Indigenous Children (LSIC) uses information gathered from approximately 1,700 Aboriginal and Torres Strait Islander children and their families across the Birth (B) and Kindergarten (K) cohorts, to show how early childhood experiences relate to later outcomes in middle childhood and in adolescence. To ensure that as many study children's experiences as possible were included in the Report, we restructured the LSIC data gathered from multiple waves of assessment into four developmental periods, allowing us to bring together information obtained from the B and K cohorts at equivalent ages. These developmental periods were:

- **Pre-school** – the years before children started the first year of formal school, spanning from birth through approximately 5 years of age. For some analyses, this period was further differentiated into two age groupings: ≤36 months (participants mostly from the B cohort) and 37-60 months (from both B and K cohorts);
- **Early school** – the initial two years of primary school (Foundation and Year 1), covering children who are 5-7 years of age (across both B and K cohorts);
- **Middle childhood** – the final two years of primary school (Years 5 and 6), covering children who are 10-12 years of age (both B and K cohorts);
- **Adolescence** – three years of secondary school (Years 8, 9, and 10), covering adolescents who are 14-16 years of age (both B and K cohorts).

Our approach meant combining information gathered from children and families at multiple assessment waves, up to maximum of 6 within the pre-school period for children from the B cohort.

Table A1.1 summarises the number of children with data available in each developmental period, the waves of assessment contributing data to that period, and descriptive information about the age (mean, standard deviation, and range) of children within each period.

When multiple waves of information were gathered for an individual child, we used a variety of methods to combine information across waves – sometimes this was an average of responses, other times it was taking the maximum or minimum score reported in any of the available waves within a developmental period.

Table A1.1. *Numbers of LSIC children represented in each developmental period.*

Developmental Period	Waves (across B & K cohorts)	Total children with data (and by number of waves)	Child age (based on Parent 1 report)		
			Mean age in months (years)	SD (months)	Range (months)
Pre-school (≤60 months and not in school)	1 to 6	**1,610 with data** - 473 with 1 wave - 295 with 2 waves - 215 with 3 waves - 436 with 4 waves - 190 with 5 waves 1 with 6 waves	39.1 (3.3)	11.4	8-60
≤36 months	1 to 4	**1,011 with data** - 184 with 1 wave - 506 with 2 waves - 316 with 3 waves - 5 with 4 waves	22.3 (1.9)	4.5	8-36
37-60 months	1 to 6	**1,459 with data** - 713 with 1 wave - 707 with 2 waves - 39 with 3 waves	49.3 (4.1)	4.7	37-60
Early school (Foundation and Year 1; ~ages 5-7 years)	1 to 8	**1,508 with data** - 381 with 1 wave - 912 with 2 waves - 195 with 3 waves - 18 with 4 waves - 2 with 5 waves	72.0 (6.0)	6.6	42-100
Middle childhood (Years 5 and 6; ~ages 10-12 years)	6 to 14	**1,387 with data** - 303 with 1 wave - 1,044 with 2 waves - 36 with 3 waves - 4 with 4 waves	133.4 (11.1)	5.9	111-162
Adolescence (Years 8, 9, & 10; ~ages 14-16 years)	9 to 14	**1,228 with data** - 392 with 1 wave - 554 with 2 waves - 262 with 3 waves - 20 with 4 waves	169.0 (14.1)	8.3	151-213

1.1 Compilation and analysis of LSIC data to tell stories about growing up strong

Recognising that stories are a prominent component of Indigenous knowledge systems, and foster connections to the domains of social and emotional well-being (SEWB; Dudgeon et al., 2025), the LSIC Early Childhood Report is grounded in stories about how Aboriginal and Torres Strait Islander children can grow up strong. The Report involved adapting established storying methods (Phillips & Bunda, 2018) for use with the LSIC data. This approach recognises that meaning is not only made, but also remade, through telling stories. When used for research purposes, stories can be appreciated for their analytic dimensions: information (i.e., data) is selected, interpreted (including through the use of

theory), and reported in ways that are meaningful (Phillips & Bunda, 2018). Guided by Gee and colleagues' (2014) SEWB model, and starting with waves of data collected during the early childhood (i.e., pre-school) period, our initial focus for analysis were responses provided by family members to one question asked of each study child in Wave 1: *"What is it about Aboriginal and Torres Strait Islander culture that will help (Study Child) grow up strong?"*.

Although 1,324 parents responded to this question in Wave 1, data eligible for analysis were restricted to responses obtained from 1,296 family members who answered the question when their child was aged less than 5 years old and had not yet commenced primary school. Thus, our analyses focused on parental perspectives about growing up strong that were made before a child commenced schooling.

Data were initially analysed by two Aboriginal researchers – Tirritpa Ritchie and Stuart Ekberg – using 'collaborative yarning' as a mode of inquiry (Bessarab & Ng'andu, 2010). This involved collective consideration of individual responses to the question about growing up strong. Over time, a consistent view emerged that responses to this question overwhelmingly corresponded to one or more domains of the SEWB model (Dudgeon et al., 2025; Gee et al., 2014). As yarning continually returned to these domains, a decision was made to quantify this distribution using content analysis (Elo & Kyngäs, 2008). Consistent with principles of research at the interface of Indigenous and Western knowledge systems (Ryder et al., 2020), researchers worked concurrently in the same physical space, enabling ongoing collaborative yarning across the content analysis process. Data from 456 family members about children in the K cohort were analysed. This analysis indicated alignment with many of the dimensions of the SEWB model:

- Connection to family and kinship (reported for 220 children out of 456).
- Connection to culture (199/456).
- Connection to mind and emotion (167/456).
- Connection to community (71/456).
- Connection to Country and land (26/456).
- Connection to spirit, spirituality, and Ancestors (28/456).
- Connection to body and behaviours (4/456).
- Other (83/456).

Responses coded as 'other' included comments that did not align with any of the domains of the SEWB model (e.g., claims about the child being too young to make connections to culture), or comments that seemed to implicitly refer to one of the domains but required interpretation to identify as such (e.g., having a 'sense of the environment around him' could be an implicit reference to a connection to Country or place, but could also be a reference to other connections, such as social environment).

Some participants provided responses to the 'growing up strong' question that related to multiple dimensions of the SEWB model, most commonly 'connection to family and kinship' and 'connection to culture' (67/456). Examples of these responses include:

- Close connection of family, traditional practices and culture.
- Knowing about culture and learning culture through my mother.
- Men and women doing their business. Keeping the culture alive in our family. Who you are, where you're from, and who your people are.
- Lots of family, respect of culture.

- Family ways, knowing his cultural beliefs and ways.

Results from content analysis confirmed that LSIC families identified ways that children could grow up strong that were congruent with most domains in the SEWB model. Nevertheless, responses to individual questions were sometimes short and fragmentary, which contrasts with data generated through yarning methods (Bessarab & Ng'andu, 2010; Kennedy et al., 2022).

To develop richer stories about how Aboriginal and Torres Strait Islander children 'grow up strong' in early childhood and beyond, focus was extended from the 'growing up strong' question to incorporate a range of questions asked of family members and study children across the 14 waves of data available for analysis in the LSIC Early Childhood Report. Open-ended questions were prioritised, as these resulted in qualitative data readily suitable for storying. Questions that resulted in quantitative data were also considered, with responses often made suitable for storying through '*qualitisation*' (Noyes et al., 2019). For example, in questions about relationship status, a response coded '14' was replaced with the textual descriptor 'mother'. The result of extending focus from the 'growing up strong' question resulted in inclusion of responses to the following open-ended questions for use in storying (see Table A1.2).

Table A1.2. *Open-ended questions providing the responses used in storying analyses.*

Question	Person Asked	Cohort Asked	Wave Asked
What is it about Aboriginal and/or Torres Strait Islander culture that will help (Study Child) grow up strong?	Parent 1	B&K	1
What is it about Aboriginal and/or Torres Strait Islander culture that will help (Study Child) grow up strong?	Parent 2	B&K	2
Are there any issues about passing Aboriginal and/or Torres Strait Islander culture on to (Study Child)?	Parent 1	B	3
What types of bush tucker does (Study Child) eat?	Parent 1	B&K	4
Are there any issues about passing on Aboriginal and/or Torres Strait Islander culture to (Study Child)?	Parent 2	B	4
What sorts of things do you do to pass on Aboriginal and/or Torres Strait Islander culture to (Study Child)?	Parent 2	B	4
What sort of activities does (Study Child) do with you or other family members to learn about Aboriginal and/or Torres Strait Islander culture?	Parents 1 & 2	B&K	5
Are there any other important things in (Study Child's) life that we haven't asked about or any other comments?	Parent 1	B&K	7
Tell us about a time you shared something about being Aboriginal and/or Torres Strait Islander in class	Study Child	K	8
What do you want other people to know about what it means to be Aboriginal and/or Torres Strait Islander?	Parent 1	B	10
What does 'grow up strong' mean to you?	Study Child, Parents 1 & 2	B&K	13
Are there any issues about passing Aboriginal and/or Torres Strait Islander culture on to (Study Youth)?	Parents 1 & 2	B&K	14

For each Wave from which responses were extracted for one or more open-ended questions, responses to the following quantitative questions were incorporated where these were available:

- Child's cohort (i.e., Birth or Kindergarten).
- Child's gender.
- Child's Indigenous status.
- Child's age.
- Remoteness classification of where child lives.
- Parent 1's Indigenous status.
- Parent 1's relationship to child.
- Parent 2's Indigenous status.
- Parent 2's relationship to Parent 1.
- Who child lives with.
- Type of home.
- Child's main residence.
- Total number of people in household.
- Total number of major events experienced by child in past 12 months.
- Child's identification with tribe, etc.
- Child's connection to Country or place.
- Location of child's homelands.
- Child visits to homelands.
- Languages spoken by child.
- Child's dominant language.

Responses to open-ended and quantitative questions were reconfigured according to Study Child and data collection wave, to enable analysis of responses made in relation to individual study children over time. Informed by the SEWB framework and findings from analysis of the 'growing up strong' question asked in Wave 1, the reconfigured data were used to tell stories about Aboriginal and Torres Strait Islander children growing up strong during and beyond early childhood. Collaborative yarning was sustained across this process to ensure collective consideration of the stories that were being told with LSIC data.

Recognising that resonance is a criterion for success in storying (Phillips & Bunda, 2018), initial findings were presented to the LSIC Steering Committee and then to the Research Administration Officers (RAOs) who collected LSIC data. The overall approach taken was endorsed at both meetings, with guidance provided on refining the storying process. For example, although the framing of questions used for this analysis were consistent with an overarching aim of the LSIC to understand how Aboriginal and Torres Strait Islander children grow up strong, discussion included the importance of foregrounding the challenges people are confronted with across their lives. Following this, data were reviewed to identify where challenges could be incorporated into stories, to understand how children can grow up strong in the face of such challenges.

1.2 Quantitative variables measuring Social and Emotional Wellbeing (SEWB)

Construction of continuous and categorical variables measuring overall SEWB and each of the SEWB domains followed the model developed by researchers at the *Centre for Indigenous Policy Research at POLIS: The Centre for Social Policy Research, Australian National University (ANU)* for the LSIC: Social and Emotional Wellbeing Report (Dinku et al., in press).

The ANU team (Dinku et al., in press) used Wave 11 and 12 data from the B and K cohorts (supplemented with Wave 8 data for some variables that were not available in Waves 11 and 12), when the B cohort were aged ~10.5-12 years (aligning with our middle childhood period), and the K cohort were aged ~13.5-15 years (aligning with our adolescent period).

The ANU SEWB model comprised five domains – these aligned directly with four of Gee and colleagues' (2014) SEWB domains (*Connection to body and behaviours; Connection to mind and emotions; Connection to family and kin;* and *Connection to community*) and combined elements of the three other SEWB domains (*Connection to culture; Connection to Country and land;* and *Connection to spirit, spirituality, and Ancestors*) into a single domain (*Connection to culture, Country, Ancestors, and spirituality*). As outlined in Table A2, each of the five domains represented in the ANU model comprised between 2 to 4 subdomains, with the exception of the domain *Connection to Mind and Emotions*, which drew on 17 items (without subdomains).

In the ANU model, 'Knowledge of Mob' was a fourth subdomain of the *Connection to culture, Country, Ancestors, and spirituality* domain, but was not used in the SEWB variables constructed for our Report, as the items comprising this subdomain were available only for our middle childhood period, and not the adolescent period. Thus, to maintain a consistent model across these developmental periods, this domain comprised just three subdomains in our Report (cf. four in the ANU model).

To include information on as many items as possible in our construction of the SEWB variables, for three items on which both child- and parent-reported information were available, we supplemented the child-reported data used in the original ANU model with information reported by parents (as noted in Table A1.3). The overall SEWB model thus draws on a total of 59 items, which are grouped according to the domains and subdomains outlined in Table A1.3.

Table A1.3. *Items comprising the five SEWB domains (and their respective subdomains).*

Connection to body
Good Physical Health
1. **(Study Child) has difficulty sleeping - child report, *(supplemented by parent data in our version)*** - Minimum across waves (6, 7, 9, 11, 13, 14) 2. **(Study Child) health condition - Whether had any eye problems – indicator** - Minimum across waves (6, 7, 8, 9, 11, 13, 14) 3. **(Study Child) health condition - Whether had any developmental problems – indicator -** Minimum across waves (6, 7, 8, 9, 11, 13, 14) 4. **(Study Child) health condition - Whether had any disability – indicator -** Minimum across waves (6, 7, 8, 9, 11, 13, 14) 5. **(Study Child) health condition - Whether had any ear problems – indicator -** Minimum across waves (6, 7, 8, 9, 11, 13, 14) 6. **(Study Child) health condition - Whether had any skin problems – indicator -** Minimum across waves (6, 7, 8, 9, 11, 13, 14)
Did Not Need Assistance
1. **(Study Child) needs extra help with looking after self due to health condition** - Minimum across waves (6, 7, 11) 2. **(Study Child) needs extra help with getting around due to health condition** - Minimum across waves (6, 7, 11) 3. **(Study Child) needs extra help with speaking or understanding due to health condition** - Minimum across waves (6, 7, 11)

No Hospital Visits
1. **(Study Child) global health measure** - Minimum across waves (6, 7, 8, 9, 10, 11, 12, 13, 14) 2. **(Study Child) health condition - Whether had any injury – indicator** - Minimum across waves (6, 7, 8, 9, 11, 13, 14) 3. **Whether (Study Child) saw medical professionals at the hospital -** Minimum across waves (6, 7, 9, 11, 13) 4. **No hospitalisations indicator** - Minimum across waves (6, 7, 9, 11, 13)
Healthy Habits
1. **Physical Activity Days** - Minimum across waves (7, 9, 11, 13) 2. **(Study Child) does not eat breakfast** - Minimum across waves (11) 3. **Hours spent active weekday** - Minimum across waves (7, 9, 11, 13)
Connection to mind and emotions
1. **(Study Child) makes friends easily** - Minimum across waves (7, 10, 12, 14) 2. **(Study Child) can work out problems** - Minimum across waves (9, 10, 12, 14) 3. **(Study Child) can do most things they try** - Minimum across waves (9, 10, 12, 14) 4. **(Study Child) has many things they do well** - Minimum across waves (9, 10, 12, 14) 5. **(Study Child) feels good about the future** - Minimum across waves (9, 10, 12, 14) 6. **Prosocial score -** child reported *(supplemented by parent report in our version)* - Minimum across waves (6, 8, 10, 12, 14) 7. **Something can cheer (Study Child) up** - Minimum across waves (9, 12) 8. **(Study Child) has a strong family** - Minimum across waves (9, 12) 9. **(Study Child) knows someone who is a good person** - Minimum across waves (9, 12) 10. **(Study Child) laughs and jokes a lot -** Minimum across waves (9, 12) 11. **(Study Child) is really into something (like music)** - Minimum across waves (9, 12) 12. **(Study Child) is a good son or daughter to their family** - Minimum across waves (9, 12) 13. **(Study Child) knows about family, history & culture** - Minimum across waves (9, 12) 14. **People say (Study Child) is good at something** - Minimum across waves (9, 12) 15. **(Study Child) has got an older person looking out for them** - Minimum across waves (9, 12) 16. **(Study Child) has lots of friends** - Minimum across waves (9, 12) 17. **(Study Child) has someone to talk to when upset** - Minimum across waves (9, 12)
Connection to family and kin
Family Relationship
1. **(Study Child) gets along with siblings/cousins** - Minimum across waves (8, 11, 14) 2. **(Study Child)'s family get along with each other** - Minimum across waves (8, 11, 13, 14) 3. **(Study Child) gets along with their brothers/sisters/cousins** - Minimum across waves (8, 11, 13, 14)
Relationship with Mum
1. **Mum spends enough time with (Study Child)** - Minimum across waves (8, 11, 13) 2. **(Study Child)'s mum spends time with (Study Child)** - Minimum across waves 9, 11) 3. **(Study Child)'s mum understands (Study Child)** - Minimum across waves (9, 11, 13, 14) 4. **(Study Child) trusts mum** - Minimum across waves (9, 11, 13, 14) 5. **(Study Child)'s mum helps (Study Child) when (Study Child) has a problem** - Minimum across waves (9, 11, 13, 14) 6. **(Study Child) talks with mum about how (Study Child) feels** - Minimum across waves (9, 11, 13, 14)
Talks to Family
1. **Sum of family members (Study Child) would go to if they were sad or upset** (range 0 to 11 - minimum across waves) - Sum of family members selected in each wave (7, 8, 11, 13) and then minimum total number across these waves

2. **Sum of family members (Study Child) would talk to when something good happens** (range 0 to 11 - minimum across waves) - Sum of family members selected in each wave (7, 8, 11, 13) and then minimum total number across these waves 3. **Proportion of family members who are in ring 1 of closeness.** Minimum then taken across the waves (10, 11, 12) - Sum of family members selected in ring 1 per wave divided by number of family members identified in that wave. Minimum then taken across the waves (10, 11, 12)
Connection to community
Youth Opinion on Community
1. **Community Safety – there are lots of fun things to do** - Minimum across waves (9, 11, 13, 14) 2. **Community Safety – (Study Child) feels safe during the day** - Minimum across waves (9, 11, 13, 14) 3. **Community Safety – (Study Child) feels safe at night** - Minimum across waves (9, 11, 13, 14)
Parent 1 Opinion on Community
1. **Good community for kids (rating 1 to 5)** - Minimum across waves (6, 7, 9, 11, 13) 2. **Good places in the community** - Minimum across waves (6, 7, 9, 11, 13)
Connection to culture, Country, Ancestors, and spirituality
Learning about being Aboriginal and/or Torres Strait Islander
1. **Sum of how many people (Study Child) learns about being Indigenous from -** Sum of people selected in each wave (7, 8, 11, 13) and then minimum total number across these waves. 2. **(Study Child) would go to Elder if they or a friend are being bullied** - Maximum across waves (7, 8, 11, 13) 3. **(Study Child) would talk to Elder if something good happens** - Maximum across waves (7, 8, 11, 13)
Being Aboriginal and/or Torres Strait Islander in class
1. **(Study Child) feels good about being Indigenous in class** - Minimum across waves (6, 8, 9, 11, 14) 2. **(Study Child) wants to share things about being Indigenous in class** - Minimum across waves (6, 8, 9, 11, 14) 3. **(Study Child) feels safe about being Indigenous in class** - Minimum across waves (8, 11, 14) 4. **(Study Child) wants classmates to know they are Indigenous** - Minimum across waves (6, 8, 9, 11, 14)
Experience of Culture
1. **Sum of bushtucker foods (Study Child) eats -** Sum of bushtucker foods selected in Wave 11 2. **(Study Child) has a connection to country** - Maximum across waves (11, 13) 3. **(Study Child) speaks Indigenous language at home** *(supplemented by parent-report of (Study Child) speaking an Indigenous language in our version)* - Minimum across waves (11, 12, 13, 14). Where child-report (cpl41) is missing, parent-report (apl5ind) supplemented.

1.2.1 Continuous measures of overall SEWB and the five SEWB domains

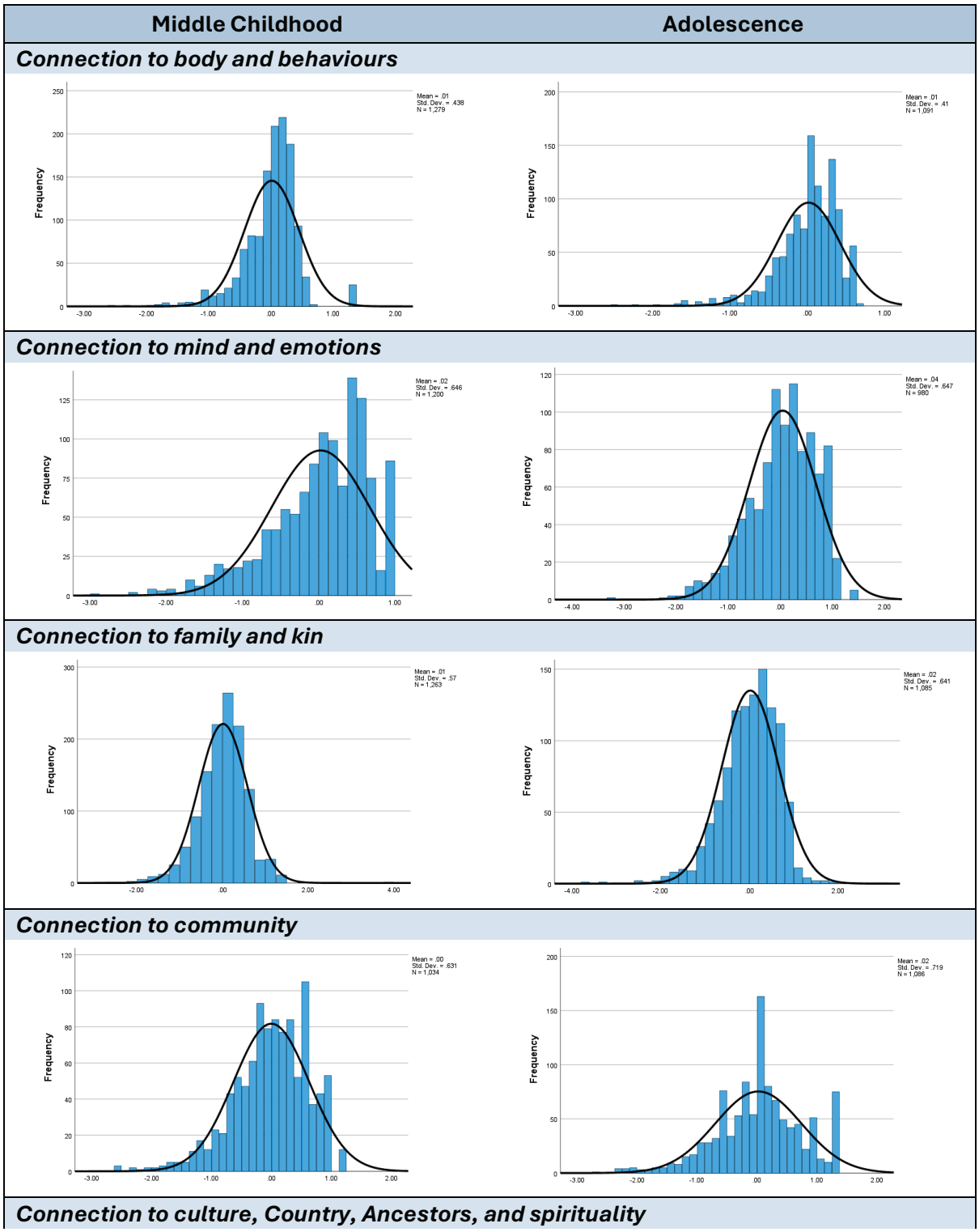
A continuous measure of overall SEWB, and continuous measures of each of the five SEWB domains, were constructed via the following steps, applied separately in each of the middle childhood and adolescent periods:

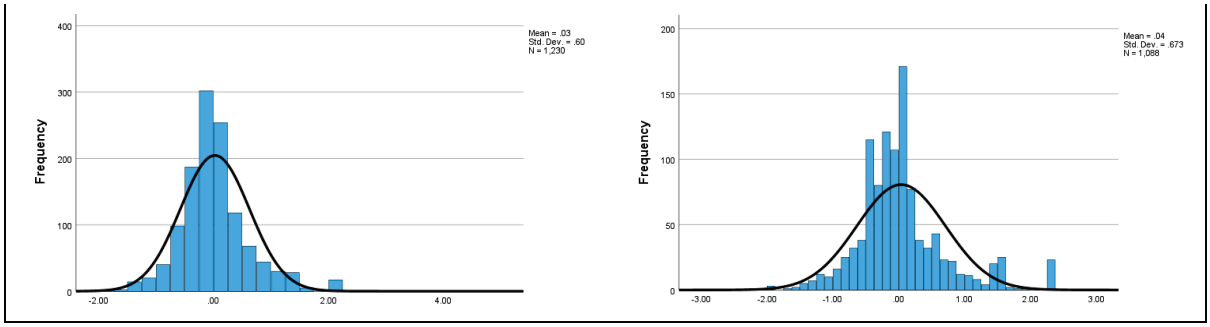
1. Standardisation all 59 items (including dichotomous items).
2. Computation of a composite measure for each SEWB subdomain (and for the *Connection to mind and emotions* domain) by computing the mean of all standardised items within the subdomain (with a minimum of at least one item required to derive the composite score on

each subdomain; few children had two or fewer items available for each subdomain). This yielded an approximately normal distribution of scores on each subdomain.

3. Standardisation of the subdomain composite scores.
4. Computation of a composite measure for each SEWB domain by computing the mean of all standardised subdomain scores (with a minimum of at least one subdomain score required to derive the composite score on each domain). This yielded an approximately normal distribution of scores on each domain (Figure A1.1).

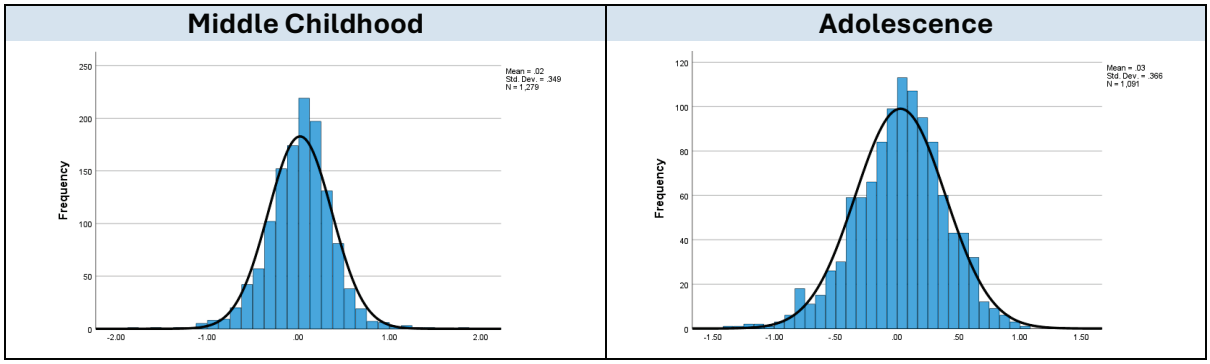
Figure A1.1. *Distribution of scores in the middle childhood and adolescent periods representing connection to each of the five SEWB domains.*





5. Computation of a composite measure of overall SEWB by computing the mean of the standardised domain scores (requiring a minimum of four of the five domain ratings to be available). This yielded an approximately normal distribution of scores (Figure A1.2).

Figure A1.2. *Distribution of overall SEWB scores in the middle childhood and adolescent periods.*



1.2.2 Categorical measures of overall SEWB and the five SEWB domains

Additionally, we derived categorical measures of overall SEWB, and dichotomous indicators of connection on each of the respective SEWB domains, separately for each of the middle childhood and adolescent periods, as follows:

1. Dichotomous indicators for each subdomain (i.e., indicating the child was connected vs. not connected on that particular subdomain), and the *Connection to mind and emotions* domain, were constructed by thresholding the continuous composite subdomain scores. Based on visual inspection of the distribution of these scores, thresholds were derived that determined approximately 90% of children had this connection, and the remaining 10% of children did not have this connection, for each of the SEWB subdomains.
2. Dichotomous indicators were then derived for each of the five SEWB domains. On each domain, a child was considered to have a connection on that domain if all available subdomains were connected (accounting for missing data). Conversely, children lacking a connection on any of the constituent subdomains were considered to not have a connection on the respective SEWB domain. Approximately 70%-90% of children had a connection on each domain within the SEWB model using this approach (Table A1.4).

Table A1.4. *Proportion of children during middle childhood and during adolescence with a connection to each of the five SEWB domains.*

Connected SEWB domain	Middle Childhood (*n*=1,279 with at least four of five SEWB domains available)		Adolescence (*n*=1,091 with at least four of five SEWB domains available)	
	n	(%)	*n*	(%)
Connection to body	912	(71.3)	850	(77.9)
Connection to mind and emotions	1,085	(90.4)	878	(89.6)
Connection to family and kin	998	(79.0)	865	(79.7)
Connection to community	865	(86.6)	940	(86.6)
Connection to culture, Country, Ancestors, and spirituality	957	(79.6)	866	(79.6)

3. Finally, a categorical measure of overall SEWB was derived by counting the number of domains on which children had a connection, up to a maximum of all five domains connected. This measure was computed only for children who had data available on at least four of the five domains within the ANU SEWB model (Table A1.5).

Table A1.5. *Proportion of children according to level of overall SEWB during middle childhood and during adolescence, as reflected in the number of SEWB domains connected.*

Overall SEWB	Middle Childhood (*n*=1,279 with at least four of five SEWB domains available)		Adolescence (*n*=1,091 with at least four of five SEWB domains available)	
	n	(%)	*n*	(%)
All SEWB domains connected	515	(40.3)	521	(47.8)
All but one SEWB domain connected	457	(35.7)	310	(28.4)
Two domains not connected	168	(13.1)	157	(14.4)
Three or more domains not connected	139	(10.9)	103	(9.4)

1.2.3 Categorical measure of overall SEWB stability across developmental periods

In order to examine the stability of children's overall SEWB across the later developmental periods in the LSIC Early Childhood Report (middle childhood and adolescence), we derived a variable that summarized the stability of connections across these two periods. This measure was computed only for children who had data available on at least four of the five domains within the ANU SEWB model (Table A1.6).

Table A1.6. *Proportion of children according to the stability of SEWB connections between middle childhood and adolescence, as reflected in the number of SEWB domains connected in each period (total n=953 children with SEWB data available for both developmental periods.*

Stability of overall SEWB across development	*n*	(%)
Stable strong SEWB in both middle childhood and adolescence	322	(33.8)
Strong SEWB in either one of the middle childhood or adolescent periods	587	(61.6)
Stable lower SEWB in both middle childhood and adolescence	44	(4.6)

1.3 Quantitative variables measuring sociodemographic factors

The following list of variables were agreed upon through consultation within the team and with the Department of Social Services for common use across the report. Below, we describe the decisions made about which data point was used, and a rationale behind these decisions.

1.3.1 Child gender

Variable name: xgender

1.3.2 Remoteness area

The *Australian Statistics Geographical Standard* ratings consist of five areas: Major Cities of Australia (1), Inner Regional Australia (2), Outer Regional Australia (3), Remote Australia (4), and Very Remote Australia (5). The maximum of these geographical ratings was computed for each developmental period.

Variable name: ara

1.3.3 Level of relative Indigenous socioeconomic outcomes (IRISEO)

Index of Relative Indigenous Socio-Economic Outcomes measure (IRISEO) is a composite, rank order community level variable derived from information on the employment, education, income, and housing characteristics of Aboriginal and Torres Strait Islander communities from Indigenous Regions across Australia (Biddle, 2009). This variable ranges from 1 to 10 (deciles) where higher numbers reflect higher socioeconomic outcomes. Waves 1 to 8 used the index from 2006 census, with this then updated using 2016 census data from Wave 9 onwards.

We calculated the minimum IRISEO value for each developmental period.

Variable name: air10

1.3.4 Experience of financial stress in the last year

Families were asked to respond yes/no to a series of items indicating financial stress in the last 12 months (LSIC items afi9_1 through to afi9_8):

- Could not pay bills on time.

- Could not pay housing payments in time.
- Went without meals.
- Unable to heat or cool home.
- Pawned/ sold something.
- Assistance from welfare organisation.
- Child could not do school activities.

Responses of 'yes' in each wave were summed to create a score for financial stress ranging from zero to 7 and then the maximum of these scores for each childhood period were computed.

1.3.5 Total number of life events in the last year

At each wave of data collection, parents were asked to report on whether they or a close family member have experienced major life events in the past year. Such events, the majority of which are stressful (e.g., badly hurt or sick, loss of a job, family member passing away, problems with police etc.), impact family and child wellbeing. A derived variable that sums the total number of these significant life events experiences in the last 12 months is available in the LSIC data release (ameleve). We calculated the maximum score across the waves represented within each developmental period.

Variable name: ameleve

1.3.6 Total number of people in the household

In each of the developmental periods, the maximum number of people in the household was calculated.

Variable name: ahftoth

1.3.7 Highest education level of Parent 1

LSIC uses 15 categories of Parent 1 highest education. These were recoded as follows:

- 4: Bachelor or higher degree.
- 3: Other post school qualification (including certificates, diplomas and other non-school qualifications).
- 2: completed high school (including year 12 or equivalent and certificate of completion).
- 1: incomplete high school (including still at school, year 11 or lower completed).

A minimum of these levels was computed for each developmental period. Additionally, we dichotomised these levels to (1) up to or below Year 12 standard, and (2) beyond a Year 12 standard.

1.4 Quantitative variables measuring early childhood cultural connections

1.4.1 Participation in cultural activities or events

Three different parent-reported items assessed children's participation in cultural events and practices in the pre-school period:

- How often do you take (Study Child) to an Indigenous cultural event, ceremony or sorry business? (variable name: apl8)

- How often do you teach (him/her) traditional practices like collecting food or hunting? (variable name: apl9)
- How often do you teach (him/her) traditional arts like painting, dance, singing and making ceremonial dress? (variable name: apl10)

Response options included: 1 = Never; 2 = Occasionally; 3 = Often; and 4 = Very Often. If multiple waves of data were available in the pre-school period, the maximum of the scores was computed.

1.4.2 Connection to Country or place

Parents were asked if study children had a connection to Country or place, and able to respond yes or no (variable name: apl12). If multiple waves of data were available within a developmental period, the maximum was taken, so that connection to Country or place was coded as 'yes' if the child was reported to have this connection in any wave.

1.4.3 Indigenous Language

In pre-school and early childhood, children's ability to speak an Indigenous language was reported by their main carer (variable name: apl5ind). In middle childhood and adolescence, study children reported on their ability to speak Indigenous language at home. Where child-report (cpl41) is missing, parent-report (variable name: apl5ind) supplemented. If multiple waves of data were available within a developmental period, Indigenous language was coded yes if it was ever reported as being spoken.

1.4.4 Identifies with Mob (tribe, language group or clan)

Parents were asked whether or not study children identified with a tribal group, a language group or a clan (variable name: apl11). If multiple waves of data were available, the maximum was computed to reflect whether a child ever identified with a tribe, language group, or clan. In our report, this was used to determine identification with Mob.

1.5 Quantitative measures of parent and family factors

1.5.1 Parenting social support

The level of parenting social support perceived by LSIC parents in the early childhood period was assessed through the following items:

Where do you go *now* for advice or information about looking after (Study Child)? Can you name three places or people you now turn to? (variable names: apw2_1 to apw2_15)

- Family or Friends
    - Partner.
    - Family living in house.
    - Family not living in this house.
    - Friends.
    - Neighbours.
- Professionals
    - Doctors.
    - Teachers.
    - Self-help or support group.
    - Government, community, other welfare organisations.

    - Telephone services.
    - Priests, religious leaders or clergy.
    - Other professionals.
- Media
    - Books, newspapers, or magazines.
    - TV, DVD, or videos.
    - Internet.

Each of the above are separate indicator variables of yes (1) and no (0).

The family and friends variables, comprising partner, family living in house, family living elsewhere, friends, and neighbours were then summed within each wave of the pre-school period. To derive one variable for the pre-school developmental period, the minimum of the summed variable within each wave was computed. This final score therefore represented the lowest level of family and friends from whom parents sought parenting advice/support within the pre-school period.

A dichotomous variable was also computed from this continuous score, with 0 representing parents who had a minimum score of 0 for family and friend supports (meaning at some wave of the pre-school period, P1 did not report seeking advice from family or friends) and 1 representing parents with a minimum of 1 or more (meaning that parents always reported at least having one family or friend parenting support.

1.5.2 Parental resilience

Parental resilience was measured using twelve items from the resilience subscale of the *Strong Souls* questionnaire developed to assess the emotional wellbeing of participants in the Aboriginal Birth Cohort Study (Thomas et al., 2010). LSIC adult participants responded to each item on a four-point ordinal scale related to each item (e.g., 0 = Never; 1 = Little bit; 2 = Fair bit; 3 = Lots). This scale (variable names: ass1_a to ass1_m) demonstrated good internal consistency in Wave 1 (α = .775).

How much is this like you?

- When you get sad or upset, you're able to find something that cheers you up [*always* to *not really*].
- You have a strong family who help each other [*always* to *not really*].
- You know someone who is a really good person [*lots of people* to *no one*].
- You got lots of friends [*lots of people* to *no one*].
- You laugh and make jokes a lot [*lots* to *not really*].
- You are really into something (like music, cars, clothes, football, fishing, computers etc) Is there something you really like doing? [*lots* to *not much*].
- You know/understand a lot of about (your) Aboriginal and/or Torres Strait Islander family history and culture [*lots* to *not much*].
- You got an older person looking out for you [*always* to *not really*].
- When you're sad or upset you have a person that you can talk to [*always* to *not really*].
- You get used to big changes in your life fairly quickly. (Give an example-like when you went to boarding school, or when you had a baby) [*always* to *not really]*.
- You are a good son or daughter to your family [*always* to *not really]*.

- People say that you are really good at something. Sports or fishing or looking after kids or something like that [*always* to *not really]*.

Scores were reversed so that higher scores reflected higher resilience on these items, and item scores across the twelve items were averaged in each wave (final scores ranging from 0 to 3). The minimum of these scores was computed across the waves of available data within the first five years of the Study Child's life.

1.5.3 Parental distress

Parental distress was measured using seven items from the distress subscale of the *Strong Souls* questionnaire developed to assess the emotional wellbeing of participants in the Aboriginal Birth Cohort Study (Thomas et al., 2010). LSIC adult participants responded to each item on a four-point ordinal scale related to each item (e.g., 0= Never; 1 = Little bit; 2 = Fair bit; 3 = Lots). This scale (variable names: asw2 to asw8) demonstrated good internal consistency in Wave 1 (α = .757).

- Have you stopped liking things that used to be fun? [*never* to *lots*].
- Have you felt like everything is hard work (even little jobs are too much)? Felt too lazy to do anything [*never* to *lots*].
- Have you felt so worried your stomach (tummy) has got upset? Big worries make you sick [*never* to *lots*].
- Have you felt worried that you had trouble breathing? [*never* to *lots*].
- Do you get angry or wild real quick? [*not much (or never)* to *lots of times*].
- Have you felt so sad that nothing could cheer you up? Not even your friends make you feel better. [*not much (or never)* to *lots of times*].
- Do you do silly things without thinking that you feel shame about the next day? [*not much (or never)* to *lots of times*].

Scores were reversed so that higher scores reflected higher distress on these items, and item scores across the seven items were averaged in each wave (final scores ranging from 0 to 3). The maximum of these scores was computed across the waves of available data within the first five years of the Study Child's life.

1.5.4 Parent Efficacy and Empowerment

In Waves 5 and 7, parents were asked to report on their confidence with parenting (variable names: aps3_a through aps3_n). Responses to these items were averaged in each wave to create a score ranging from 1 to 10, with a minimum score then calculated across those two waves. Based on the timing, data was only available in the Early School period, when children were in Foundation or Year 1. On average, parents reported high parenting efficacy and empowerment, with an average of 8.99 (standard deviation = 0.97).

Parents were asked to rate how well each of the below statements describes the way they feel, with options ranging from 1 (nothing like me) to 10 (exactly like me).

- I find it easy to talk to people like teachers, doctors, and nurses about my children.
- I know how to get useful information about how my children's needs change as they grow.
- I feel good when I think about the future of my children.
- I can work out what to do if any of my children have a problem.
- We have clear rules and routines in my family.

- I can find services for my children when I need to.
- In my family there is more to enjoy than to worry about.
- I stay calm and manage life even when it's stressful.
- I believe my children will do well at school.
- I feel I'm doing a good job as a parent.
- I feel good about myself.
- I feel good about the way my children behave.
- I can make time for my children when they need it.
- I know my children feel secure.

1.5.5 Parental Warmth

Parents were asked to report on their parenting practices, with six items comprising the parental warmth scale. Parents are provided five options for responses: always, often, sometimes, rarely, and never. Responses were coded on this scale from 0 to 4, and these responses were averaged in each wave and the minimum of these scores was computed within the pre-school developmental period. On average, parents reported high levels of warmth (Mean = 3.67, standard deviation = 0.42). Items included:

- How often do you hug or hold (Study Child) for no particular reason? [variable name: apw1_a].
- When (Study Child) does something really well, how often do you go out of your way to say how pleased you are? [variable name: apw1_c].
- How often do you enjoy listening to (Study Child)? [variable name: apw1_k].
- How often do you enjoy doing things together with (Study Child)? [variable name: apw1_e].
- How often do you feel close to (Study Child) when they are happy? [variable name: apw1_l].
- How often do you feel close to (Study Child) when they are upset? [variable name: apw1_m].

1.5.6 Parental Harsh Discipline

Parents were asked to report on their parenting practices, with four items comprising the parental discipline scale (variable names: apw1_f through apw1_i). Parents are provided five options for responses: always, often, sometimes, rarely, and never. Responses were coded on this scale from 0 to 4, and these responses were averaged in each wave and the minimum of these scores was computed within the pre-school developmental period. On average parents reported low levels of harsh discipline (Mean = 1.84, standard deviation = 0.79). Items in this scale included:

- How often do you yell or shout when you are telling off (Study Child) for doing something wrong?
- How often would you make study child stay in their bedroom is they misbehave?
- If you tell (Study Child) they will get punished if they don't stop doing something, but they keep doing it, how often do you end up punishing them?
- If you tell (Study Child) they will get punished if they don't stop doing something, but they keep doing it, how often do you end up smacking them?

1.5.7 Home learning

In the pre-school period, we computed a composite score of home learning, comprised of the following parent-report items:

- Did you or any other family members tell an oral story to (Study Child) during the last week? [variable name: aac1a_c].
- Did you or any other family members engage in drawing, arts, or crafts with (Study Child) during the last week? [variable name: aac1a_f].
- Did you or any other family members engage in music and dance activities with (Study Child) during the last week? [variable name: aac1a_a].
- Did you or any other family members engage in housework or cooking with (Study Child) during the last week? [variable name: aac1a_e].
- Did you or any other family members play indoors with (Study Child) during the last week? [variable name: aac1a_g].
- Did you or any other family members play outdoors with (Study Child) during the last week? [variable name: aac1a_h].
- Did you or any other family members take (Study Child) shopping during the last week? [variable name: aac1a_d].
- Did you or any other family members listen to (Study Child) read in the past month? [variable name: aac17a].

Responses on these items were either no [0] or yes [1]. A maximum of the available data in each early development period was calculated for each of these items, and then a sum of these item scores was computed.

1.6 Quantitative measures of school and teacher factors

1.6.1 Closeness (teacher-student relationships)

Student-teacher closeness was measured on seven items on the Pianta Student Teacher Relationship Scale (Pianta, 1992) ($\alpha = 0.8$):

- I share an affectionate, warm relationship with this child [variable name: dcc33_1].
- If upset, this child will seek comfort from me [variable name: dcc33_3].
- This child values his/her relationship with me [variable name: dcc33_5].
- When I praise this child, he/she beams with pride [variable name: dcc33_6].
- This child spontaneously shares information about himself/herself [variable name: dcc33_7].
- It is easy to be in tune with what this child is feeling [variable name: dcc33_9].
- This child openly shares his/her feelings and experiences with me [variable name: dcc3315].

Responses to the seven items for each scale were recoded to 1 = Definitely does not apply, 2 = Not really, 3 = Neutral/Not sure, 4 = Applies somewhat, 5 = Definitely applies. These items were averaged (provided there was data on at least three items) within each wave of available data within the early school years (Foundation and Year 1), and then an overall mean was computed.

1.6.2 Conflict (teacher-student relationships)

Student-teacher conflict was measured on seven items on the Pianta Student Teacher Relationship Scale (Pianta, 1992) ($\alpha = 0.9$):

- This child and I always seem to be struggling with each other (i.e. having a hard time getting along) [variable name: dcc33_2].

- This child easily becomes angry with me [variable name: dcc33_8].
- This child remains angry or resistant after being disciplined [variable name: dcc3310].
- Dealing with this child drains my energy [variable name: dcc3311].
- When this child is in a bad mood, I know we're in for a long and difficult day [variable name: dcc3312].
- This child's feelings towards me can be unpredictable or can change suddenly [variable name: dcc3313].
- This child is manipulative with me [variable name: dcc3314].

Responses to the seven items for each scale were recoded to 1 = Definitely does not apply, 2 = Not really, 3 = Neutral/Not sure, 4 = Applies somewhat, 5 = Definitely applies. These items were averaged (provided there was data on at least three items) within each wave of available data within the early school years (Foundation and Year 1), and then an overall mean was computed.

1.6.3 School engagement

This five-item scale (variable names: ace87_1 to ace87_5) uses parent-report to determine how children are managing with school. The following five items are included:

- How well do you think (Study Child) is managing in school with school work?
- How well do you think (Study Child) is managing in school with making friends?
- How well do you think (Study Child) is managing in school with being good?
- How well do you think (Study Child) is managing in school with feeling strong?
- How well do you think (Study Child) is managing in school with knowing where to be and when?

Responses were recoded to 0 = Not very well at all, 1 = Not very well, 2 = Ok/Reasonably well, 3 = Well, 4 = Extremely well. Composite scores ranges from 0 to 4.

1.7 Quantitative measures of cognitive and academic factors

1.7.1 Visual-motor and early literacy skills: Who am I?

The *Who am I?* is a developmental assessment that requires the child to write their name, copy shapes, write letters, numbers and words in a small booklet, with simple instructions and encouragement from the interviewer. The *Who am I?* is not language dependent and is suitable for children with limited English. The assessment takes about 10 minutes to complete and is suitable for pre-school children and children in the first two years of school. In LSIC, the *Who Am I?* was collected in waves 2 and 3 for the K cohort and waves 5 and 6 for the B cohort (variable name: cwitot2). For the LSIC Early Childhood Report, we averaged scores across waves for data available when children were aged under 5 years.

1.7.2 PAT reading comprehension

In the early school and middle childhood period, we calculated both an average and maximum value of children's scores on the *Progressive Achievement Test* (PAT) of reading comprehension (variable name: cprscal) across available waves of data.

1.7.3 PAT mathematics

In the middle childhood period, we calculated both an average and maximum value of children's scores on the *Progressive Achievement Test* (PAT) of mathematics (variable name: cpmscal) across available waves of data.

1.7.4 Classroom self-regulation

This scale comprises teacher-reported six items (variable names: dcc20_1 to dcc20_6), with responses ranging from: Never (1), Sometimes (2), Often (3), Very often (4). A mean of the available data for each of the six items was computed in the early school period, and then the mean of these averaged items was then computed, with scores ranging from 1 to 4. The calculated scale demonstrated good internal consistency (Cronbach's alpha = 0.932). Items ask teacher to report how often study children demonstrated the following behaviours in the past month or two:

- Keeps belongings organised.
- Shows eagerness to learn new things.
- Works independently.
- Easily adapts to changes in routine.
- Persists in completing tasks.
- Pays attention well.

1.7.5 Attentional self-regulation

Attentional self-regulation was measured using the task persistence subscale from the *Short Temperament Questionnaire for Children* (Prior et al., 2010) and has been used in prior research using LSIC and Longitudinal Study of Australian Children (LSAC) data (Little et al., 2012; Williams et al., 2017). This scale comprises four parent-report items (variable names: apa4_b, apa4_e, apa4_h, apa4_l), with response options as follows: Almost Never (1), Not Often (2), Usually does not (3), Usually does (4), Frequently (5), Almost Always (6). One item (variable name: apa4_l) was reverse coded and available data in the early school period across Waves 2 and 5 were averaged, and then these items were averaged, with final scores ranging from 1 to 6. This scale demonstrated acceptable internal consistency (Cronbach's alpha = 0.661). These items included:

- When they start a project such as a puzzle or a model, they work on it without stopping until it is completed even if it takes a long time.
- They like to complete one task or activity before going onto the next.
- They stay with an activity (e.g., puzzle, construction kit, or reading) for a long time.
- When a toy or game is difficult, they quickly turn to another activity (reversed).

1.7.6 Emotional self-regulation

Emotional self-regulation was measured using the emotional reactivity subscale from the *Short Temperament Questionnaire for Children* (Prior et al., 2010) and has been used extensively in prior LSAC and LSIC research (Little et al., 2012; Williams et al., 2017). Parents reported on their child's emotional self-regulation across four items (variable names: apa4_c, apa4_f, apa4_i, apa4_k), with three items reverse coded. Response options included: Almost Never (1), Not Often (2), Usually does not (3), Usually does (4), Frequently (5), Almost Always (6). Within the early school period, scores on each item were averaged (between Wave 2 and 5) and then the four items computed were averaged to create a composite score ranging from 1 to 6. This composite score demonstrated moderate internal consistency (Cronbach's alpha = 0.573). The items included in this scale include:

- If they want a toy or sweet while shopping, they will easily accept something else instead.
- When they are angry about something, it is difficult to sidetrack them.
- When shopping together, if I do not buy what they want (e.g., sweets, clothing), they cry and yell.
- If they are upset, it is hard to comfort them.

1.7.7 Expressive vocabulary: Renfrew Word Finding Vocabulary Test.

The *Renfrew Word Finding Vocabulary Test* assesses children's expressive vocabulary (compared, for instance, with the *Peabody Picture Vocabulary Test*, which is a test of receptive vocabulary). It assesses the extent to which pictures of objects, arranged in order of difficulty, can be named correctly. Most of the objects illustrated have no alternative names, so the responses of children can be quickly measured. The assessment contains 50 line-drawn pictures and is suitable for children aged 3-9 years.

Children's total scores for the word finding vocabulary test (variable name: crftot1) was standardised in each wave (i.e., X – Mean/ Standard Deviation). The mean of the standardized scores was then computed for each child and rescaled.

1.7.8 Receptive language: Macarthur-Bates Communication Development Inventory

The *Macarthur-Bates Communication Development Inventory* assessed children's receptive language, meaning their ability to understand and comprehend language. This LSIC report used the *Vocabulary for Babies Checklist* total score for how many words study children can say in English.

Children's total scores for the number of words they can say in English (variable names: cmbtot3, cmbtot5, and cmbtot7) were standardised in each wave (i.e., X – Mean/ Standard Deviation). The mean of the standardized scores was then computed for each child and rescaled.

1.8 Quantitative measures of health and wellbeing

1.8.1 Overall/global health

Children's and parent's health was assessed using a single item on which parents report on the global health of Study Child (variable name: ahc1) or themselves (variable name: aoc1): "*In general, would you say (Study Child)'s health is excellent, very good, good, fair or poor?"* Responses were recoded as: 0 = poor, 1 = fair, 2 = good, 3= very good, and 4 = excellent). The minimum score within each wave of available data in each developmental period was computed.

1.8.2 Social-emotional difficulties

Difficulties were assessed via the total difficulties (variable name: asqdiff) score on the parent report *Strengths and Difficulties Questionnaire* (SDQ; Goodman, 2001), comprising subscales of *emotional symptoms, peer relationship problems, conduct problems,* and *hyperactivity-inattention*. Williamson et al. (2014) have previously determined the construct validity and reliability of the SDQ subscales for Aboriginal children within The Study of Environment on Aboriginal Resilience and Child Health. Total difficulty scores were averaged across the middle childhood and adolescent periods.

1.8.3 Kessler psychological distress

In Waves 13 and 14 children reported on their psychological distress (if they provided consent) across five items:

In the last four weeks how often did you:

- Feel nervous [variable name: csw18_2].
- Feel without hope [variable name: csw18_4].
- Feel restless or jumpy [variable name: csw18_5].
- Feel that everything was an effort [variable name: csw18_8].
- Feel so sad that nothing could cheer them up [variable name: csw18_9].

Response options included: 0 = none of the time; 1 = a little bit of the time; 2 = some of the time; 3 = most of the time; 4 = all of the time. For each wave (13 and 14) the mean of these five variables was computed. Internal consistency was good (Wave 13 = .746 and 14 = 823). To derive one score for the adolescent period, the maximum of Wave 13 and 14 scores was computed.

1.9 Quantitative measures of executive function

Executive functioning (EF) was measured with three tasks from *Cogstate* (www.cogstate.com) and included in the LSIC data collection for Wave 10 (K cohort) and Wave 15 (B cohort). These screen-based tasks were presented on a laptop computer. Each task had a short practice session in which the LSIC interviewer explained the task and a practice trial is completed. An overall measure of executive function score was derived from a standardised performance score on each task and combined to develop a composite EF outcome measure.

Table A1.6. *Overview of Cogstate tasks*.

Task code	Task name	Cognitive function tested	Administration time	Description
IDNT	Identification test	Choice reaction time; attention	2 minutes	Q: Is the card red?
ONBT	One-back test	Working memory	2 minutes	Q: Is the card the same as the previous card?
GMLT	Groton maze learning test	Spatial memory; impulse control and inhibition of erroneous responses	5 minutes	Find the hidden pathway

- **Identification Task:** This task measured information processing, requiring visual attention and measuring choice reaction time. A playing card is displayed briefly on screen and participant must make a judgement if it is red or black. If it is red, then the participant presses "Yes" (a marked key on notebook keyboard); if it is not red person presses "No" on the key board. The speed at which the person can process the onscreen information and react by pressing the correct key is measured, so it is about being fast and accurate in responses, across 30 trials presented in 2 minutes. Participants were required to complete 75% of test trials to receive a score. Performance integrity was based on an accuracy score. Accuracy of performance was

computed by taking the arcsine square root of the proportion of correct responses (Integrity failure if > 80% of trials). The primary performance measure for this task was reaction time in milliseconds (speed), which was normalized using a log10 transformation. Lower scores represent faster reaction time and therefore a more higher skill level.

- **One Back Task:** This task focused on working memory, requiring the participant to mentally retain some information before being able to make a response. A 'pack of playing cards' is displayed. On each trial, the card at the front goes to the back of the pack and next card is shown. As soon as the second card is displayed, participant must decide, whether or not, the card displayed is identical to the previous card. The participant presses a computer key marked "Yes" and, if it is not the same the "No" key is pressed. Correct responses are counted across 30 trials presented in 2 minutes. participants were required to complete 75% of test trials to receive a score. Performance integrity was based on an accuracy score. Accuracy of performance was computed by taking the arcsine square root of the proportion of correct responses (Integrity failure if > 70% of trials). The accuracy score was normalized using an arcsine square-root transformation, with this being used as the final outcome score.
- **Groton Maze Learning Test:** This task requires visual-spatial memory, planning, and problem-solving skills. Participants need to find a hidden pathway through a maze, and learn the directions of the pathway with each move made and in response to feedback after each move. Participants have opportunity to learn the rules of the task on a small practice grid. In the main task, the participant, by trial and error, needs to locate the hidden pathway (28 steps), from top left corner to bottom right corner on a 10 x 10 grid of tiles. There are five trials using the same pathway of 2 minutes each. After an incorrect move, a participant must return to the last position to make a different choice on direction. When a participant makes a correct move, a green tick mark is presented on screen and when a participant makes a move to a tile not on the pathway, an incorrect move is indicated by a red cross. On the *Groton Maze* task, performance integrity failure was defined as >120 errors. The summary outcome measure used was total errors, which is the sum of legal and rule-break errors, with higher scores indicating less strong performance on this measure.

An additional filter was also applied to the data for each task in which scores below/above three standard deviations were not included. A composite score for executive function was constructed using the three measures, following procedures described in Maruff and colleagues (2013). For each task, the mean and standard deviation were computed and standardised. A composite score was computed by averaging the standardised scores for the three tasks; re-standardised using the mean and standard deviation for the composite score; transformed once more so that each had a mean of 100 and a standard deviation of 10, and multiplied by −1 so that higher scores indicated more competent performance (for identification and Groton Maze). If data were available for at least two of the three tests for any case, a composite score was created.

1.10 Quantitative measures relating to digital technology

1.10.1 Internet Access in Early Childhood

Parents reported whether study children used the internet and specified settings for this use, including home, school, or elsewhere. A dichotomized variable was computed, categorizing children into 1 = children whose parents reported that they had access to the internet at home (variable name:

aac31_a) in at least one wave of the early school (Foundation or Year 1) period and 0 = children who did not have access to the internet at home in the early school period.

1.10.2 Technology self-concept

LSIC children were able to report on their confidence in reading. Three items were summed in each wave of available data in middle childhood and adolescence (separately) and these summed scores were then averaged across each of these developmental periods. A minimum of these wave scores was also computed.

Responses were recoded as follows: 0 = Never, 1 = Not much, 2 = Little bit, 3 = Fair bit, 4 = Most of the time 5= Always. Composite scores ranged from 0 to 15. Items included in this scale include:

- I am good at technology/computers [variable name: csc76].
- I learn things fast in technology/computers [variable name: csc77].
- I like technology/computers [variable name: csc78].

1.10.3 Perceived safety on the internet

In Wave 12 and 14, LSIC children were asked whether they feel safe on the internet (variable name: cte12), with responses recoded as either 0 = No and 1 = Yes. If responses were available in both waves for children in the adolescent period, the minimum of these scores was computed.

1.10.4 Range of activities engaged in using a mobile device

In Wave 12 children were asked to report on what activities they use their mobile phone device for, answering a 0 = no or 1 = yes to the below items.

What do you use mobile phone for:

- keeping in contact with family and friends [variable name: cte7a_1a].
- meeting new people [variable name: cte7a_2a].
- emails [variable name: cte7a_3a].
- school work [variable name: cte7a_4a].
- using software like Microsoft office [variable name: cte7a_5a].
- searching internet for information [variable name: cte7a_6a].
- watching television or movies [variable name: cte7a_7a].
- YouTube or listening to music [variable name: cte7a_8a].
- Gaming and online gaming [variable name: cte7a_9a].
- Banking [variable name: cte7a_11a].
- Calendar. Alarm clock, organization [variable name: cte7a_12a].
- Creative activities [variable name: cte7a_13a].
- Supporting a cause online [variable name: cte7a_14a].

A mean of the responses to these items was computed for each child with final scores ranging from 0 to 1. These scores represent proportions of the number of activities children engage in when using their mobile phone.

2.0 Supplementary detail of quantitative analyses

The following sections provide additional information regarding quantitative analyses reported in Chapters 3 through 10 of the LSIC Early Childhood Report. The numbering of Tables and Figures within this section (excepting those in Section 2.10) align to the Chapter of the Report from which they derive (e.g., tables labelled with the prefix A2 all report detail from Chapter 2 of the Report).

Odds ratios and their 95% confidence intervals are abbreviated in the tables as OR (95% CI).

2.1 Supplementary detail for analyses reported in Chapter 2

Table A2.1. *Proportions of children in each remoteness area who participated in formal childcare only, informal childcare only, both formal and informal childcare, and summary of significant differences between areas in these care rates; as illustrated in Report Figure 2.5.*

Remoteness area	Formal childcare only (%)	Rows with the same letters do not differ significantly (p<.05)	Informal childcare only (%)	Rows with the same letters do not differ significantly (p<.05)	Both formal and informal childcare (%)	Rows with the same letters do not differ significantly (p<.05)
Major cities	6	a	40	a	46	a
Inner regional areas	4	a, b	48	b	42	a
Outer regional areas	2	b	59	c	34	b
Remote areas	1	b	69	d	20	c
Very remote areas	2	b	68	d	21	c

Note. A fourth group of children not receiving any childcare (ranging from 6-10% of children) is not reported here. No significant differences were observed in the distribution of these children across remoteness areas.

Table A2.2. *Proportions of children in each remoteness area who did and did not attend a playgroup prior to starting school, and summary of significant differences between areas in attendance rates; as illustrated in Report Figure 2.6.*

Remoteness area	Attended a playgroup prior to starting school (%)	Did not attend a playgroup prior to starting school (%)	Rows with the same letters do not differ significantly (p<.05)
Major cities	45	55	a
Inner regional areas	43	57	a
Outer regional areas	45	55	a
Remote areas	33	68	b
Very remote areas	32	69	b

Table A2.3. *Proportions of children in each remoteness area who did and did not attend a formal preschool program in the year prior to starting school, and summary of significant differences between areas in attendance rates; as illustrated in Report Figure 2.7.*

Remoteness area	Attended a formal preschool program in the year prior to starting school (%)	Did not attend a formal preschool program in the year prior to starting school (%)	Rows with the same letters do not differ significantly (p<.05)
Major cities	62	38	a
Inner regional areas	64	36	a
Outer regional areas	63	37	a
Remote areas	37	63	b
Very remote areas	43	58	b

2.2 Supplementary detail for analyses reported in Chapter 3

Table A3.1. *Proportions of children in each remoteness area who did and did not participate in cultural activities prior to starting school, and summary of significant differences between areas in these participation rates; as illustrated in Report Figure 3.1.*

Remoteness area	No cultural participation prior to starting school (%)	Cultural participation prior to starting school (%)	Rows with the same letters do not differ significantly (p<.05)
Major cities	24	76	a
Inner regional areas	19	18	a
Outer regional areas	12	88	b
Remote areas	12	88	b
Very remote areas	3	97	c

Table A3.2. *Odds ratios (with 95% confidence intervals) associated with levels of overall SEWB during middle childhood and during adolescence for children who participated in cultural activities during the pre-school period, relative to children who did not; as illustrated in Report Figures 3.2 (middle childhood) and 3.3 (adolescence).*

	Middle Childhood		Adolescence	
Overall SEWB	**OR (95% CIs)**	***p***	**OR (95% CIs)**	***p***
All SEWB domains connected	2.59 (1.55, 4.31)	<.001	2.67 (1.52, 4.68)	<.001
All but one SEWB domains connected	1.71 (1.04, 2.81)	.033	1.40 (0.79, 2.47)	.245
Three SEWB domains connected	1.40 (0.79, 2.48)	.252	1.52 (0.79, 2.94)	.213
Two or fewer SEWB domains connected*	1.00		1.00	

*Note. * Reference group.*

Table A3.3. *Odds ratios (with 95% confidence intervals) associated with levels of SEWB connections across middle childhood (MC) and adolescence (AD) for children who participated in cultural activities, relative to children who did not; as illustrated in Report Figure 3.4.*

Overall SEWB across development	OR (95% CIs)	*p*
Strong SEWB connections in *both* MC and AD	2.88 (1.35, 6.16)	<.001
Strong SEWB connections in *either* MC or AD	2.08 (1.02, 4.25)	.044
Lower SEWB connections during *both* MC and AD*	1.00	

*Note. * Reference group.*

2.3 Supplementary detail for analyses reported in Chapter 4

Table A4.1. *Proportions of children in each remoteness area who did and did not have a connection to Country or place prior to starting school, and summary of significant differences between areas in these connection rates; as illustrated in Report Figure 4.1*

Remoteness area	No connection to Country or place prior to starting school (%)	Connection to Country or place prior to starting school (%)	Rows with the same letters do not differ significantly (p<.05)
Major cities	54	46	a
Inner regional areas	41	59	b
Outer regional areas	30	70	c
Remote areas	26	74	c, d
Very remote areas	20	80	d

Table A4.2. *Odds ratios (with 95% confidence intervals) associated with levels of overall SEWB during middle childhood and during adolescence for children who had a connection to Country during the pre-school period, relative to children who did not; as illustrated in Report Figures 4.3 (middle childhood) and 4.4 (adolescence).*

	Middle Childhood		Adolescence	
Overall SEWB	OR (95% CIs)	*p*	OR (95% CIs)	*p*
All SEWB domains connected	2.36 (1.55, 3.61)	<.001	2.24 (1.40, 3.57)	<.001
All but one SEWB domains connected	1.83 (1.20, 2.79)	.005	1.82 (1.12, 2.97)	.017
Three SEWB domains connected	1.21 (0.74, 1.95)	.448	1.00 (0.58, 1.73)	1.00
Two or fewer SEWB domains connected*	1.00		1.00	

*Note. * Reference group.*

Table A4.3. *Odds ratios (with 95% confidence intervals) associated with levels of SEWB connections across middle childhood (MC) and adolescence (AD) for children who had a connection to Country, relative to children who did not; as illustrated in Report Figure 4.5.*

Overall SEWB across development	OR (95% CIs)	*p*
Strong SEWB connections in *both* MC and AD	2.88 (1.43, 5.77)	<.001
Strong SEWB connections in *either* MC or AD	1.57 (0.80, 3.07)	.187
Lower SEWB connections during *both* MC and AD*	1.00	

*Note. * Reference group.*

Table A4.4. *Odds ratios (with 95% confidence intervals) associated with connection to culture, Country, Ancestors, and spirituality during middle childhood and during adolescence periods for children who had a connection to Country during pre-school, relative to children who did not; as illustrated in Report Figure 4.6.*

Connection to Country in Pre-School	Connection to culture, Country, Ancestors, and spirit			
	Middle Childhood		Adolescence	
	OR (95% CIs)	*p*	OR (95% CIs)	*p*
Connection to Country in pre-school	2.78 (2.08, 3.71)	<.001	2.56 (1.84, 3.54)	<.001
No connection to Country in pre-school*	1.00		1.00	

*Note. * Reference group.*

2.4 Supplementary detail for analyses reported in Chapter 5

Table A5.1. *Proportions of children in each remoteness area who did and did not speak an Indigenous language prior to starting school, and summary of significant differences between areas in these language speaking rates; as illustrated in Report Figure 5.1.*

Remoteness area	Didn't speak an Indigenous language prior to starting school (%)	Spoke an Indigenous language prior to starting school (%)	Rows with the same letters do not differ significantly (p<.05)
Major cities	90	10	a
Inner regional areas	96	4	b
Outer regional areas	74	26	c
Remote areas	68	32	c
Very remote areas	29	71	d

Table A5.2. *Proportions of children in each remoteness area who did and did not speak an Indigenous language during the initial two years of school, and summary of significant differences between areas in these language speaking rates; as illustrated in Report Figure 5.1.*

Remoteness area	Didn't speak an Indigenous language during the initial two years of school (%)	Spoke an Indigenous language during the initial two years of school (%)	Rows with the same letters do not differ significantly (p<.05)
Major cities	94	6	a
Inner regional areas	95	5	a
Outer regional areas	73	27	b
Remote areas	66	34	b
Very remote areas	24	76	c

Table A5.3. *Odds ratios (with 95% confidence intervals) associated with levels of overall SEWB during middle childhood for children who spoke an Indigenous language during the pre-school and early school periods, relative to children who did not; as illustrated in Report Figure 5.3.*

Overall SEWB in middle childhood	Spoke an Indigenous language			
	Pre-School		Early School	
	OR (95% CIs)	*p*	OR (95% CIs)	*p*
All SEWB domains connected	1.39 (0.84, 2.30)	.197	2.39 (1.31, 4.34)	.004
All but one SEWB domains connected	1.26 (0.76, 2.10)	.373	1.41 (0.76, 2.62)	.278
Three SEWB domains connected	1.09 (0.60, 1.97)	.771	1.71 (0.83, 3.51)	.144
Two or fewer SEWB domains connected*	1.00		1.00	

*Note. * Reference group.*

Table A5.4. *Odds ratios (with 95% confidence intervals) associated with levels of overall SEWB during adolescence for children who spoke an Indigenous language during the pre-school and early school periods, relative to children who did not; as illustrated in Report Figure 5.4.*

Overall SEWB in adolescence	Spoke an Indigenous language			
	Pre-School		Early School	
	OR (95% CIs)	*p*	OR (95% CIs)	*p*
All SEWB domains connected	6.33 (2.70, 14.81)	<.001	4.81 (2.24, 10.36)	<.001
All but one SEWB domains connected	3.69 (1.53, 8.87)	.004	2.50 (1.13, 5.54)	.024
Three SEWB domains connected	1.68 (0.62, 4.55)	.307	2.12 (0.91, 4.97)	.083
Two or fewer SEWB domains connected*	1.00		1.00	

*Note. * Reference group.*

Table A5.5. *Odds ratios (with 95% confidence intervals) associated with levels of SEWB connections across middle childhood (MC) and adolescence (AD) for children who spoke an Indigenous language during the pre-school and early school periods, relative to children who did not; as illustrated in Report Figure 5.5.*

Overall SEWB across development	Pre-School		Early School	
	OR (95% CIs)	*p*	OR (95% CIs)	*p*
Strong SEWB connections in *both* MC and AD	2.97 (1.02, 8.64)	.045	11.28 (1.51, 84.53)	.018
Strong SEWB connections in *either* MC or AD	1.83 (0.63, 5.26)	.265	8.57 (1.16, 63.64)	.036
Lower SEWB connections during *both* MC and AD*	1.00		1.00	

*Note. * Reference group.*

Table A5.6. *Odds ratios (with 95% confidence intervals) associated with connections to culture, Country, Ancestors, and spirituality during middle childhood and adolescence for children who spoke an Indigenous language during the pre-school (PS) and early school (ES) periods, relative to children who did not; as illustrated in Report Figure 5.6.*

Spoke and Indigenous language during early childhood	Connection to culture, Country, Ancestors, and spirit			
	Middle Childhood		Adolescence	
	OR (95% CIs)	*p*	OR (95% CIs)	*p*
Spoke an Indigenous language in PS	2.21 (1.51, 3.24)	<.001	5.58 (3.04, 10.22)	<.001
Spoke an Indigenous language in ES	2.55 (1.55, 4.22)	<.001	3.38 (2.05, 5.56)	<.001
No connection to Country in PS or ES*	1.00		1.00	

*Note. * Reference group.*

2.5 Supplementary detail for analyses reported in Chapter 6

Table A6.1. *Proportions of children in each remoteness area who did and did not identify with Mob prior to starting school, and summary of significant differences between areas in these language speaking rates; as illustrated in Report Figure 6.1.*

Remoteness area	Didn't identify with Mob prior to starting school (%)	Identified with Mob prior to starting school (%)	Rows with the same letters do not differ significantly (p<.05)
Major cities	51	49	a
Inner regional areas	43	57	c
Outer regional areas	33	67	c
Remote areas	23	77	d
Very remote areas	25	75	d

Table A6.2. *Odds ratios (with 95% confidence intervals) associated with levels of overall SEWB during middle childhood and adolescence for children who identified with Mob (a tribe, language group or clan), relative to children who did not; as illustrated in Report Figures 6.2 (middle childhood) and 6.3 (adolescence).*

Overall SEWB	Middle Childhood		Adolescence	
	OR (95% CIs)	*p*	OR (95% CIs)	*p*
All SEWB domains connected	2.29 (1.51, 3.48)	<.001	0.94 (0.55, 1.63)	.035
All but one SEWB domains connected	1.90 (1.25, 2.88)	.003	1.50 (0.93, 2.44)	.099
Three SEWB domains connected	1.32 (0.82, 2.14)	.253	1.64 (1.03, 2.59)	.831
Two or fewer SEWB domains connected*	1.00		1.00	

*Note. * Reference group.*

Table A6.3. *Odds ratios (with 95% confidence intervals) associated with levels of SEWB connections across middle childhood (MC) and adolescence (AD) for children who identified with Mob (a tribe, language group or clan) in the pre-school period, relative to children who did not; as illustrated in Report Figure 6.4.*

Overall SEWB across development	OR (95% CIs)	*p*
Strong SEWB connections in *both* MC and AD	2.26 (1.14, 4.44)	.019
Strong SEWB connections in *either* MC or AD	1.15 (0.60, 2.20)	.682
Lower SEWB connections during *both* MC and AD*	1.00	

*Note. * Reference group.*

Table A6.4. *Odds ratios (with 95% confidence intervals) associated with connections to culture, Country, Ancestors, and spirituality during middle childhood (MC) and adolescence (AD) for children who identified with Mob (a tribe, language group or clan) in the pre-school period, relative to children who did not; as illustrated in Report Figure 6.5.*

Identified with Mob during Pre-School	Connection to culture, Country, Ancestors, and spirit			
	Middle Childhood		Adolescence	
	OR (95% CIs)	*p*	OR (95% CIs)	*p*
Identified with Mob	2.18 (1.58, 3.01)	<.001	2.14 (1.60, 2.85)	<.001
Did not identify with Mob	1.00		1.00	

*Note. * Reference group.*

2.6 Supplementary detail for analyses reported in Chapter 7

Table A7.1. *Odds ratios (with 95% confidence intervals) associated with levels of overall SEWB during middle childhood for children whose parents were supported by friends and family in the early childhood period relative to children whose parents were not; as illustrated in Report Figure 7.3.*

	Middle Childhood	
Overall SEWB	**OR (95% CIs)**	***p***
All SEWB domains connected	1.61 (1.07, 2.42)	.023
All but one SEWB domains connected	1.37 (0.90, 2.07)	.138
Three SEWB domains connected	1.02 (0.63, 1.65)	.946
Two or fewer SEWB domains connected*	1.00	

*Note. * Reference group.*

Table A7.2. *Odds ratios (with 95% confidence intervals) associated with SEWB connections to specific domains during middle childhood for children who had parents who reported seeking support from family and friends during the early childhood period, relative to children whose parents did not; as illustrated in Report Figure 7.4.*

Middle childhood SEWB connections	**OR (95% CIs)**	***p***
Connection to mind and emotions	1.99 (1.29, 3.08)	.002
Connection to community	1.44 (1.02, 2.05)	.039
Connection to culture, Country, Ancestors, and spirituality	1.42 (1.07, 1.88)	.015

Table A7.3. *Pearson correlations between parents' resilience and distress in early childhood and children's developmental outcomes; as summarised in Report Table 7.2.*

	Parent Wellbeing	
Children's developmental outcomes	**Resilience**	**Distress**
Pre-school (Under 5 years of age)		
Overall health	**.107*** **	**-.071** **
Receptive Language (MacArthur-Bates)	**.124*** **	-.050
Visual-Motor and Early Literacy Skills	.031	**-.070***
Early school (Prep and Year 1)		
Overall health	**.079** **	-.025
Classroom self-regulation	**.087***	**-.160*** **
Attentional self-regulation	**.160*** **	**-.111** **
Emotional self-regulation	**.097***	**-.188*** **
PAT Reading comprehension	**.093***	-.079
Middle childhood (Years 5 and 6)		
Overall health	**.070***	-.031
Social-emotional difficulties	**-.124*** **	**.204*** **
School engagement	**.120*** **	**-.119*** **
Adolescence (Years 8 to 10)		
Social-emotional difficulties	**-.111***	.092
Kessler's psychological distress	**-.134*** **	**.120** **
School engagement	**.143*** **	**-.116*** **

Table A7.4. *Results of multivariable linear regression exploring predictors of children's social-emotional difficulties in middle childhood.*

Middle Childhood Social-Emotional Difficulties		
Variables included in analysis (n = 1,081)	**Bivariate *r***	**Adjusted β**
Sociodemographic factors		
Gender (girls)	**0.15*** **	**0.14*** **
Family socio-economic status (IRISEO)	**-0.09** **	**-0.11** **
Remoteness	0.01	-0.06
Parental Wellbeing in early childhood		
Parental Resilience	**-0.12*** **	**-0.06***
Parental Distress	**0.20*** **	**0.17*** **

Variance explained = 7.2%

Table A7.5. *Results of multivariable linear regression exploring predictors of children's psychological distress in adolescence.*

Adolescent Psychological Distress		
Variables included in analysis (n = 684)	**Bivariate *r***	**Adjusted β**
Socio-demographic factors		
Gender (girls)	**-0.24*** **	**-0.23*** **
Family socio-economic status (IRISEO)	**0.12** **	<0.01
Remoteness	**-0.22*** **	**-0.20*** **
Parental Wellbeing in early childhood		
Parental Resilience	**-0.14*** **	**-0.09***
Parental Distress	**0.13*** **	**-0.10** **

Variance explained = 12.4%

2.7 Supplementary detail for analyses reported in Chapter 8

Table A8.1. *Multivariable regression results exploring association between pre-school playgroup attendance and middle childhood school engagement.*

Middle Childhood School Engagement		
Variables included in analysis (n = 579)	**Bivariate *r***	**Adjusted β**
Sociodemographic factors		
Gender (girls)	**-0.13*** **	**-0.13*** **
Family socio-economic status (IRISEO)	0.03	-0.02
Remoteness	**-0.07***	-0.07
Pre-school factors		
Playgroup attendance	**0.07***	**0.06***

Variance explained = 2.6%

Table A8.2. *Multivariable regression results exploring association with early school student-teacher relationships and middle childhood school engagement.*

Middle Childhood School Engagement		
Variables included in analysis (n = 579)	**Bivariate *r***	**Adjusted β**
Sociodemographic factors		
Gender (girls)	**-0.14*** **	-0.08
Family socio-economic status (IRISEO)	0.01	-0.06
Remoteness	-0.07	-0.10
Teacher relationships in early school		
Teacher closeness	**0.15*** **	0.06
Teacher conflict	**-0.28*** **	**-0.24*** **

Variance explained = 9.2%

Table A8.3. *Multivariable regression results exploring association between early school student-teacher relationships and adolescent school engagement.*

Adolescent School Engagement		
Variables included in analysis (n = 511)	**Bivariate *r***	**Adjusted β**
Sociodemographic factors		
Gender (girls)	<0.01	0.05
Family socio-economic status (IRISEO)	0.07	<0.01
Remoteness	**-0.12****	**-0.12***
Teacher relationships in early school		
Teacher closeness	**0.14****	**0.10***
Teacher conflict	**-0.14*****	**-0.12***

Variance explained = 4.4%

Table A8.4. *Significant relationships in multivariable models between classroom and attentional self-regulation during early school and school engagement during middle childhood.*

Early School Classroom Self-Regulation and Middle Childhood School Engagement		
Variables included in analysis (n = 581)	**Bivariate *r***	**Adjusted β**
Sociodemographic factors		
Gender (girls)	**-0.14*****	-0.03
Family socio-economic status (IRISEO)	0.10	-0.05
Remoteness	-0.06	-0.06
Self-regulation in early school		
Classroom self-regulation	**0.35*****	**0.34*****
Early School Attentional Self-Regulation and Middle Childhood School Engagement		
Variables included in analysis (n = 393)	**Bivariate *r***	**Adjusted β**
Sociodemographic factors		
Gender (girls)	**-0.09***	-0.09
Family socio-economic status (IRISEO)	0.05	-0.01
Remoteness	-0.08	-0.09
Self-regulation in early school		
Attentional self-regulation	**0.13****	**0.13***

Variance explained: Classroom self-regulation = 12.6%, Attentional self-regulation = 3.1%

Table A8.5. Significant relationships in multivariable models between classroom and attentional self-regulation during early school and school engagement during adolescence.

Early School Classroom Self-Regulation and Adolescent School Engagement		
Variables included in analysis (n = 516)	**Bivariate *r***	**Adjusted β**
Sociodemographic factors		
Gender (girls)	0.01	0.06
Family socio-economic status (IRISEO)	0.07	-0.01
Remoteness	**-0.13****	**-0.11***
Self-regulation in early school		
Classroom self-regulation	**0.18*****	**0.19*****
Early School Attentional Self-Regulation and Adolescent School Engagement		
Variables included in analysis (n = 496)	**Bivariate *r***	**Adjusted β**
Sociodemographic factors		
Gender (girls)	-0.05	-0.04
Family socio-economic status (IRISEO)	0.05	<0.01
Remoteness	**-0.08***	-0.09
Self-regulation in early school		
Attentional self-regulation	**0.13****	**0.13****

Variance explained: Classroom self-regulation = 4.8%, Attentional self-regulation = 2.6%

Supplementary Results A8.1. Testing a pathway model from playgroup attendance in pre-school to early school self-regulation to middle childhood school engagement.

Mediation models are explored using the Baron and Kenny approach, detailed below:

Step 1: Total Effect of pre-school playgroup attendance (predictor) on middle childhood school engagement (outcome): β = 0.07, p = .021.

Step 2: Effect of pre-school playgroup attendance (predictor) on early school classroom self-regulation (mediator): β = 0.08, p = .037.

Step 3: Effect of early school classroom self-regulation (mediator) on middle childhood school engagement (outcome), accounting for pre-school playgroup attendance (predictor): β = 0.34, p <.001.

Step 4: Effect of pre-school playgroup attendance (predictor) on middle childhood school engagement (outcome), accounting for early school classroom self-regulation (mediator): β = 0.03, p = .441.

These results suggest that early school self-regulation is a full mediator of the association between playgroup attendance and later school engagement. This means that playgroup attendance strengthens children's self-regulation skills, which in turn then provide the foundation for school engagement, even into middle childhood.

2.8 Supplementary detail for analyses reported in Chapter 9

Table A9.1. *Standardised estimates from longitudinal path model predicting academic achievement; as illustrated in Report Figure 9.1.*

Path	Standardized estimate	95% CI	*p* value
Predicting academic achievement (NAPLAN reading) in Year 5			
Number of people living in house	-.07	-.12, -.01	.02
Socio-economic position	.21	.14, .28	<.01
Remoteness	-.10	-.18, -.03	< .01
Attended playgroup	.14	.03, .24	.01
Vocabulary (pre-school)	.25	.18, .31	< .01
Visual motor and early literacy skills (pre-school)	.08	.01, .14	.03
Classroom self-regulation (early school)	.20	.13, .27	< .01
Predicting classroom self-regulation in early school			
Vocabulary (pre-school)	.09	.01, .17	.03
Visual motor and early literacy skills (pre-school)	.26	.18, .33	< .01
Playgroup	.14	.001, .27	.049
Girl	.48	.34, .61	< .01
Remoteness	-.11	-.20, -.01	.03
Parent advice seeking	.07	.002, .14	.04
Predicting visual motor and early literacy skills (pre-school)			
Attended preschool	.32	.20, .43	< .01
Parent advice seeking	.07	.01, .13	.03
Home learning environment	.09	.01, .15	.03
Girl	.42	.31, .52	< .01
Socio economic status	.14	.07, .21	< .01
Predicting vocabulary (pre-school)			
Parent advice seeking	.11	.05, .16	< .01
Home learning environment	.10	.04, .16	< .01
Attended preschool	.23	.13, .34	< .01
Number of people living in house	-.12	-.17, -.06	< .01
Socio economic status	.17	.11, .23	< .01
Remoteness	-.26	-.32, -.20	< .01
Correlations			
Vocabulary ↔ Predicting visual motor and early literacy skills (pre-school)	.31	.24, .37	< .01
Remoteness ↔ socio-economic status	-.62	-.62, -.58	< .01
Remoteness ↔ home learning	-.22	-.29, -.16	< .01
Remoteness ↔ Number of people living in house	.27	.21, .31	< .01
Socio-economic status ↔ home learning	.17	.11, .23	< .01
Socioeconomic status ↔ Number of people living in house	-.19	-.24, -.14	< .01
Number of people living in house ↔ parent advice seeking	-.10	-.15, -.05	< .01

Table A9.2. Standardised estimates from longitudinal path model predicting adolescent executive functioning; as illustrated in Report Figure 9.1.

Path	Standardized estimate	95% CI	P value
Predicting executive function in adolescence			
Visual motor and early literacy skills (pre-school)	.15	.03, .27	.01
Predicting visual motor and early literacy skills (pre-school)			
Attending preschool	.37	.15, .59	< .01
Parent advice seeking	.11	.004, .22	.04
Socio economic status	.15	.01, .29	.03
Predicting classroom self-regulation in early school			
Remoteness	-.23	-.40, -.07	< .01
Predicting vocabulary (pre-school)			
Parent advice seeking	.17	.08, .27	< .01
Home learning environment	.14	.04, .24	< .01
Attended preschool	.27	.08, .46	< .01
Number of people living in house	-.09	-.18, -.003	.04
Remoteness	-.33	-.44, -.22	< .01
Correlations			
Visual motor and early literacy skills (pre-school) ↔ Vocabulary	.31	.21, .41	< .01
Visual motor and early literacy skills (pre-school) ↔ classroom self-regulation	.35	.23, .46	< .01
Vocabulary ↔ classroom self-regulation	.17	.04, .29	.01
Remoteness ↔ socio-economic status	-.55	-.62, -.47	< .01
Remoteness ↔ home learning	-.14	-.27, -.007	.04
Remoteness ↔ Number of people living in house	.34	.27, .42	< .01
Socio-economic status ↔ home learning	.18	.05, .31	< .01
Socioeconomic status ↔ Number of people living in house	-.27	-.37, -.17	< .01
Number of people living in house ↔ parent advice seeking	-.15	-.24, -.05	< .01

2.9 Supplementary detail for analyses reported in Chapter 10

Table A10.1. *Proportions of children in each remoteness area who used the internet at home during the initial two years of school and who did not use the internet at home, and summary of significant differences between areas in these home internet use rates; as illustrated in Report Figure 10.1.*

Remoteness area	Used internet at home during the initial two years of school (%)	Did not use internet at home during the initial two years of school (%)	Rows with the same letters do not differ significantly (p<.05)
Major cities	56	44	a
Inner regional areas	41	59	b
Outer regional areas	38	62	b, c

Remote areas	27	73	c
Very remote areas	8	92	d

Table A10.2. *Results of multivariable linear regression exploring predictors of children's reading comprehension in early childhood.*

Early Childhood PAT Reading Comprehension		
Variables included in analysis (n = 374)	**Bivariate *r***	**Adjusted β**
Sociodemographic factors		
Gender (girls)	**-0.09***	-0.04
Family socio-economic status (IRISEO)	**0.22*****	**0.12***
Technology		
Uses internet at home in early school period	**0.21*****	**0.12***
Learning-related factors (pre-school)		
Home learning	**0.09***	0.03
Expressive vocabulary	**0.27*****	**0.14***
Visual-motor and early literacy skills	**0.24*****	**0.13***

Variance explained = 12.5%

Table A10.3. *Results of multivariable linear regression exploring predictors of children's executive functioning in adolescence.*

Adolescent Executive Functioning		
Variables included in analysis (n = 150)	**Bivariate *r***	**Adjusted β**
Sociodemographic factors		
Gender (girls)	-0.06	-0.01
Family socio-economic status (IRISEO)	**0.20****	0.11
Technology		
Uses internet at home in early school period	**0.34*****	**0.27*****
Learning-related factors (pre-school)		
Home learning	0.03	-0.02
Expressive vocabulary	**0.20****	-0.01
Visual-motor and early literacy skills	**0.35*****	**0.29*****

Variance explained = 21.4%

2.10. Associations of sociodemographic factors with SEWB during middle childhood

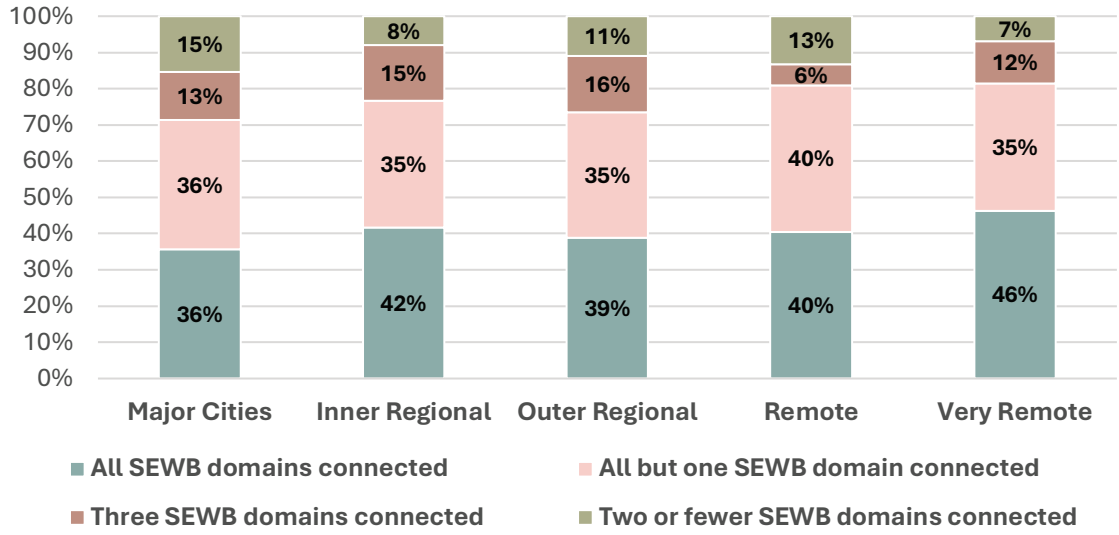
We explored the association between overall SEWB during middle childhood and sociodemographic factors. Firstly, we investigated distribution across remoteness, with the results described below:

- *Overall SEWB (*Figure A2.10.1)*:* Children from major cities were less likely to be connected on all five domains (36%), compared to inner and outer regional remote areas (42% and 39%, respectively), and remote and very remote areas (40% and 46%, respectively).
- *Connection to body:* Children from major cities were less likely to be connected to body and

behaviour (64%) than all other regional areas (>70% connected).

- *Connection to mind and emotions:* No differences in distribution were found across remoteness regions.
- *Connection to family and kinship:* No differences in distribution were found across remoteness regions.
- *Connection to community:* No differences in distribution were found across remoteness regions.
- *Connection to culture, Country, Ancestors, and spirituality:* Children in very remote regions were more likely to be connected (89%) relative to children from all other regions (<81% connected).

Figure A2.10.1 *Proportion of children at each level of overall SEWB during middle childhood, according to remoteness.*



This effect of remoteness is likely to contribute to the pattern of associations observed between SEWB connections and other sociodemographic variables gathered in the LSIC. For example, analyses of the association between SEWB connections and area-based socioeconomic advantage indicated that children who were connected on two or fewer SEWB domains had significantly higher socioeconomic scores (Mean = 6.0) than children who were connected on all but one (Mean = 5.5) and also children who were connected on all domains (Mean = 5.4). The same pattern, whereby children with connection had significantly lower socio-economic advantage scores than children who were not connected, was found across *Connection to body* and *Connection to culture, Country, Ancestors, and spirituality*.

Regarding financial stress scores, children who were connected on *body*, *mind and emotions,* and *community* had significantly lower financial stress scores than children who were not connected. Children connected on all five domains had significantly lower financial stress scores (Mean = 0.9) than children who were connected on two or fewer domains (Mean = 1.3).

However, children who were connected on *culture, Country, Ancestors, and spirituality* had significantly higher financial stress scores than children who were not connected. Similarly, children connected to *culture, Country, Ancestors, and spirituality* also had significantly higher average numbers of people living in the household.

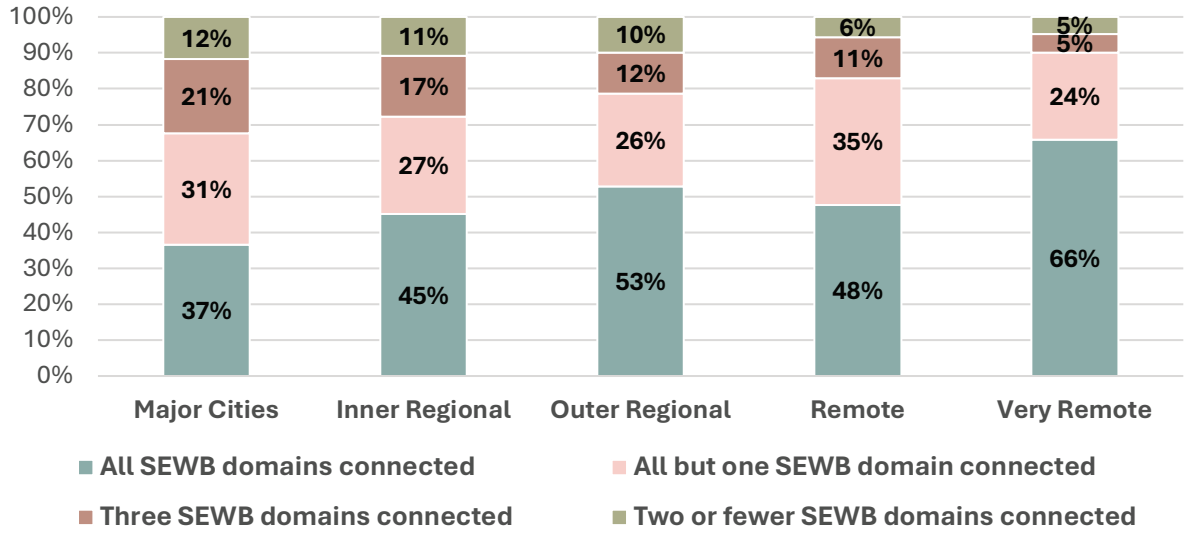
The number of major life events experienced by the family was significantly lower among children who were connected on the *body, mind and emotions,* and *community* domains, compared to children who were not connected on these domains. The opposite was true for connection to *culture, Country, Ancestors, and spirituality*. Children who were connected on all five domains had significantly fewer major life events (Mean = 4.3) than children who were not connected on three or more domains (Mean = 5.0).

2.11 Associations of sociodemographic factors with SEWB during adolescence

The association between SEWB connections during adolescence and remoteness of the child's residence was investigated, with the results described below:

- *Overall SEWB* (Figure A2.10.2)*:* Children from major cities were less likely to be connected on all five domains (37%), compared to inner and outer regional remote areas (45% and 53%, respectively), and remote and very remote areas (48% and 66%, respectively).
- *Connection to body:* Children from major cities and inner regional areas were less likely to be connected to body (73% and 69%, respectively) than those of all other regions (>83% connected).
- *Connection to mind and emotions:* No differences in distribution were found across remoteness regions.
- *Connection to family and kinship:* No differences in distribution were found across remoteness regions.
- *Connection to community:* Children in very remote areas were more likely to be connected to community (93%) than children from remote, outer regional, and major city regions (<86% connected).
- *Connection to culture, Country, Ancestors, and spirituality:* Children in major cities were less likely to be connected to culture, Country, Ancestors, and spirituality (71%) relative to all other regions (>78% connected), especially children from very remote regions where 94% were connected (significantly more than all other regions).

Figure A2.20.2. *Proportion of children at each level of overall SEWB during adolescence, according to remoteness.*



The association between overall SEWB in adolescence and area-based socioeconomic advantage,

found that children who were connected on all five domains had significantly lower socioeconomic scores (Mean = 5.5) than children who were connected on all but one domain (Mean = 5.9), connected on three domains (Mean = 6.3), and connected on two or fewer domains (Mean = 6.0). The same pattern, whereby connected children had significantly lower socio-economic advantage scores than children who were not connected, was found across *Connection to Body* and *Connection to culture, Country, Ancestors, and spirituality*.

Regarding financial stress scores, children who were connected on *body*, *mind and emotions, family and kinship,* and *culture, Country, Ancestors, and spirituality* had significantly lower financial stress scores than children who were not connected. Children who were connected on two or fewer SEWB domains had significantly higher financial stress scores (Mean = 1.4), relative to children connected on all but one domain (Mean = 1.0), and children connected on all domains (Mean = 0.8). Similarly, children who were connected on all but one SEWB domain had significantly higher financial stress scores (Mean = 1.1) than children connected on all domains.

Children connected to *family and kinship* and *culture, Country, Ancestors, and spirituality* had significantly higher average numbers of people living in the house. Children who were connected on all five domains had a higher number of people living in the household (Mean = 5.5) compared to children who connected on two or fewer domains (Mean = 4.9) and children who were connected on all but one domain (Mean = 5.2).

The number of major life events experienced by the family was significantly lower among children who were connected on *body, mind and emotions, family and kinship,* and *community* domains, compared to children who were not connected on these domains. Children who were connected on all five domains experienced significantly fewer major life events (Mean = 3.9) than children who were connected on all but one domain (Mean = 4.5), connected on three domains (Mean = 4.9), and connected on two or fewer domains (Mean = 5.5).

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