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The Longitudinal Study of Australian Children (LSAC)

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Parenting measures in the Longitudinal Study of Australian Children: construct validity and measurement quality, Waves 1 to 4

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Abbreviations used in this report

ADF	asymptotically distribution-free
B cohort	the 'baby' cohort in LSAC, recruited at age 0–1 years
CAG	Consortium Advisory Group
CFA	confirmatory factor analysis
CFI	Comparative Fit Index
Coefficient H	H-index of scale reliability
DSS	Department of Social Services, formerly the Department of Families, Housing, Community Services and Indigenous Affairs
K cohort	the 'kindergarten' cohort in LSAC, recruited at age 4–5 years
LSAC	Longitudinal Study of Australian Children
NNFI	non-normed fit index (also called the Tucker-Lewis Index)
P1	parent 1, the child's primary resident parent
P2	parent 2, the child's secondary resident parent
PLE	parent living elsewhere
RMSEA	Root Mean Squared Error of Approximation
SEM	Structural Equation Modelling
SRMR	Standardised Root Mean Residual
TLI	Tucker-Lewis Index (also called the non-normed fit index)
WLS	Weighted Least Squares

Executive Summary

This monograph reports an investigation of the measurement properties of the mother- and father-reported parenting measures used in the Longitudinal Study of Australian Children (LSAC) across Waves 1 to 4 for the B (baby) and K (kindergarten) cohorts. Evidence to date from LSAC confirms the important role of parenting in shaping children's behavioural and emotional adjustment, early literacy, and lifestyle related health conditions such as obesity. Parenting is also a key pathway via which environmental factors influence children—including moderating the effects of parental work, parent mental health and socioeconomic circumstances. The widespread implications of parenting for child development makes it a focus of researchers, practitioners and policymakers alike. With LSAC designed to be a major evidence base for understanding children's development in contemporary Australia, it is critical that we can have confidence in LSAC's parenting measures.

Analytically, the parenting data in LSAC are complex and can be challenging to understand and use. We present an overview of how parenting was conceptualised in the design of LSAC and the approach used to select suitable item sets for the first four waves of data collection. Parenting may be reported by up to three individuals in the LSAC child's life, and here we focus on measures completed by the child's resident parents (P1 and P2), analysed by parent gender (i.e. the recoded 'mother' and 'father' items). As parenting is developmentally sensitive, the way that parenting was assessed varied over time—both in terms of the constructs measured and the item sets used to assess these constructs. The omnibus nature of LSAC has meant that included constructs needed to be assessed succinctly, and parenting was no exception. Potential item sets from existing measures were usually reduced before inclusion, with such decisions informed as much as possible by existing data and field testing. As a result, the parenting measures employed in LSAC have been largely purpose designed for the study and their properties warrant careful examination.

Objectives

The LSAC mother- and father-reported parenting measures used across Waves 1 to 4 were examined to establish:

- the extent to which the items used to measure particular dimensions of parenting are reliable indicators of that construct and
- the extent to which measures used at different ages appear to measure the same underlying construct.

In addition, we provide recommendations on the optimal approach for using the LSAC parenting measures in future analyses, including the use of item weightings and the exclusion of poorly performing items.

Method

We employed Structural Equation Modelling (SEM) to examine the properties of the mother- and father-reported parenting measures and derive recommended weighted composites. We also report the scale reliability (or internal consistency) of each recommended measure using Coefficient H. As the SEM approach requires measures that comprise at least 4 items, and we restricted the analyses (with the exception of maternal separation anxiety) to those constructs which had been measured over at least 2 waves of LSAC, modelling was undertaken for 7 constructs: parenting warmth, hostility, anger, consistency, separation anxiety, inductive reasoning and parenting efficacy. Accounting for mothers' and fathers' data across the 4 waves for the B and K cohorts, 69 congeneric (measurement) models were fitted.

Results

Initial model fitting revealed room for improvement across the majority of measures: 30% of the models exhibited a 'good' fit to the data, 38% were an 'acceptable' fit and 34% failed to meet the specified fit criteria. Model fits varied across waves and respondents. Parental warmth, hostility and inductive reasoning exhibited 'acceptable' to 'good' fits throughout. In contrast, parenting consistency exhibited a uniformly unacceptable fit. Parental anger and parenting efficacy on the other hand varied more markedly by respondent and wave.

To achieve the best performing measures, a number of model modifications were made. These involved deletion of a poorly performing item (one item each for parenting anger and consistency), and allowing a correlated error between two items where there was evidence of shared method variance (for parenting efficacy). Modifications were undertaken in consideration of all models for each measure; we sought to achieve comparable item pools across waves, respondents and cohorts.

With only 4 exceptions, across the 69 models these minor modifications resulted in good (58%) or acceptable (36%) fit. Scale reliabilities (or internal consistency) of the revised composite variables were also good to excellent with the exception of parental anger, for which 10 of the 12 Coefficient H's fell below the desired threshold of 0.80.

Measurement invariance over time was examined by calculation of between-wave correlations (by each parent, in each cohort) for the modified parenting composite variables. The results suggest that the revised measures are indeed tapping the same underlying construct over time, with a pattern for the cross-wave correlations to strengthen at older ages.

Conclusions and Recommendations

Despite the complexity of measuring parenting longitudinally, two-thirds of LSAC's very brief parenting measures, if used in an unmodified form, appear to be working well or reasonably well; one-third are less than optimal. With relatively simple modifications, it is possible to achieve good (58%) or acceptable (36%) for 65 of the 69 measures examined here.

Recommendations on the optimal approach for researchers to use with these variables depends on the nature of their intended use (see Appendix A: Frequently asked questions, question 4):

- If the user simply wants to compare the relative positioning of respondents (i.e. identifying those who are high versus low warmth), a simple additive score is all that is required. However, in these cases it is recommended that the user excludes one poorly performing item each for parenting anger and consistency (see Table 5.1).
- For analytic methods that are informed by the distributional properties of the measures (e.g. multiple regression, SEM), use of the weighted composite measures is recommended. Syntax is provided in Appendix E: SPSS syntax for creating final, recommended composite measures to assist users to construct the weighted composites.
- Additionally, based on exploratory work not presented here, we recommend that researchers use the parenting measures classified by parent gender (i.e. the mother and father variables) rather than caregiver status (i.e. P1 and P2).

At least 4 further lines of research are recommended to build on the work reported here: the measurement properties of the parenting variables collected from Wave 2 for parents living elsewhere (PLEs) should be examined through a similar process of model fitting; factor invariance across sample subgroups could be tested (e.g. by child gender, sibship position and family structure); measurement invariance of the parenting measures over time can be more formally tested using confirmatory factor analysis (see Box 4.1); and the work undertaken here needs to be continued to establish the properties of the parenting data collected from Wave 5 onwards.

1. Introduction

1.1 Aims of this report

This monograph investigates the measurement properties of the parenting measures used in *Growing Up in Australia*: The Longitudinal Study of Australian Children (LSAC), and presents recommendations for how to best use these measures in research. This chapter provides an overview of parenting as it is conceptualised and measured within LSAC.

LSAC is one of the largest and most comprehensive studies of children undertaken in Australia. It tracks 2 cohorts longitudinally beginning in the first year of life (for the baby or B cohort) or at age 4 (for the kindergarten or K cohort). Data are collected every 2 years on children's physical, emotional and cognitive wellbeing, as well as their family and environmental circumstances. Details of the sampling procedure, retention at each wave and available sample weights are available in a series of technical reports (Daraganova & Sipthorp, 2011; Sipthorp & Misson 2009; Misson & Sipthorp, 2007; Soloff, Lawrence & Johnstone, 2005; Soloff, Lawrence, Misson & Johnstone, 2006). At the time of writing, 4 waves of data were available, covering birth to 7 years for the B cohort, and 4–11 years for the K cohort. Information is collected from multiple sources, including resident and non-resident parents, teachers and carers and via direct child assessments and child self-report, when children are old enough. LSAC is funded by the Australian Government Department of Social Services (DSS, formerly the Department of Families, Housing, Community Services and Indigenous Affairs), and is conducted jointly by this department, the Australian Institute of Family Studies (AIFS), and the Australian Bureau of Statistics (ABS). The data are used by researchers from a variety of disciplinary backgrounds.

A major strength of LSAC is its collection of data on a wide range of parenting behaviours. Parenting is a key determinant of child wellbeing, and central to research and policy aiming to promote the best outcomes for children. At each wave of data collection, LSAC assesses the parenting behaviours of the child's primary carer (parent 1, P1) and, if applicable, a second resident carer (parent 2, P2), and a parent living elsewhere (PLE, from Wave 2 onwards). The conceptual framework and decision-making processes that underpinned the selection of parenting measures for LSAC are described in the next section.

Evidence to date from LSAC confirms the influence of parenting on children's behavioural and emotional adjustment (Bayer et al., 2011), early literacy (Brown, Bittman & Nicholson, 2007), and lifestyle related health conditions such as obesity (Brown, Broom, Nicholson & Bittman, 2010; Wake et al., 2007). Parenting is also a key pathway via which environmental factors influence children—including moderating the effects of parental work, parent mental health and socioeconomic circumstances (Giallo, Cooklin, Wade, D'Esposito & Nicholson, 2013; Lucas, Erbas & Nicholson, 2013; Strazdins et al., 2010). With LSAC providing a major evidence base for understanding children's development in contemporary Australia, it is critical that we can have confidence in LSAC's parenting measures.

From an analytic perspective, there are a number of challenges that face researchers when they use the parenting data from LSAC. First, the data are complex. Parenting may be reported by up to 3 individuals in the child's life. Across the waves, the majority of (but not all) P1s are mothers, while the majority of (but not all) P2s and PLEs are fathers.

Second, parenting practices are developmentally sensitive. Across its first 4 waves, LSAC assesses the parenting of infants through to toddlers, preschoolers and primary school age children. Wave 5 (due for release in the second half of 2013) has assessed the parenting of children on the cusp of adolescence (age 12–13 years). The dimensions of parenting that are assessed, and the items used to measure these areas, vary accordingly. Some parenting dimensions are not assessed at some ages, primarily due to being deemed not be developmentally relevant. Some dimensions are assessed with item sets that expand or retract over time.

Third, given the practical need to fit the parenting content within the framework of a broad omnibus study where many aspects of children's lives are being assessed, it was necessary to select very parsimonious item sets to assess each construct of interest. As a consequence, the parenting measures used in LSAC are often subsets of items from existing tools, and should be regarded as having been largely purpose designed for the study.

Finally, within each wave, the elected priority was to collect all parenting measures possible for the identified P1. For P2 and PLE, some parenting constructs were not able to be included.

In order to have confidence in using the LSAC parenting measures, the following are helpful:

- careful scrutiny of the psychometric properties of each parenting measure for each type of parent respondent at each wave
- development of guidelines regarding how each measure should be computed for optimal use and
- estimation of the extent to which a parenting construct measured at one wave corresponds to the same construct measured at another wave.

We address these issues in this monograph with a primary focus on the first 2 activities. Specifically, for each parenting measure used in LSAC at Waves 1 to 4, we summarise the evidence regarding:

- the extent to which the items used to measure particular dimensions of parenting are reliable indicators of that construct and
- the extent to which measures used at different ages appear to measure the same underlying construct.

We provide recommendations on the optimal approach for using the LSAC parenting measures in future analyses, including recommendations for using item weightings and excluding poorly performing items.

We restricted this analysis to the parenting measures reported by resident mothers and fathers (P1s and P2s). Similar procedures are recommended to ascertain the properties of the parenting measures reported by parents living elsewhere (PLEs).

1.2 Overview of the measurement selection process for LSAC

Selection of the parenting constructs and items included in LSAC was undertaken by the Family Functioning Design Team[1] of the LSAC Consortium Advisory Group[2]. The process for measurement selection was established in the development phase for Wave 1 and has been repeated at each subsequent wave. Prior to study commencement, the Consortium Advisory Group and DSS undertook an initial construct mapping of potential content for all LSAC domains. Each domain was reviewed by the relevant design team (e.g. Family Functioning, Health, Education, Childcare, Socio-demographics) who evaluated the relevance and importance of the constructs and proposed an initial set of measures for consideration. These were then subject to a number of reviews by the Consortium Advisory Group, DSS, AIFS and the ABS. Throughout the process, feedback was sought from relevant content experts and broader stakeholder groups including potential data users and state and federal government departments.

Specific criteria employed to evaluate all proposed LSAC content are summarised in Table 1.1 (Sanson et al., 2002), indicating the criteria relevant at the level of selecting constructs, and those relevant to selecting particular measures. Given the breadth of domains covered in LSAC, theoretical importance, parsimony and time efficiency were paramount considerations in measurement selection. After the selection of the initial Wave 1 content, *measurement consistency* became an additional consideration. Consistency in constructs and item sets was sought to enable longitudinal analyses.

[1] At Wave 1 the Family Functioning Design Team was headed by Jan Nicholson, with members Michael Bittman, Bryan Rodgers, Ann Sanson, Lyndall Strazdins and Stephen Zubrick.

[2] The Consortium Advisory Group is chaired by Stephen Zubrick and comprises: John Ainley (Australian Council for Educational Research), Peter Azzopardi (Centre for Adolescent Health, Murdoch Childrens Research Institute), Donna Berthelsen (Queensland University of Technology), Michael Bittman (University of Sydney), Bruce Bradbury (University of New South Wales), Linda Harrison (Charles Sturt University), Jan Nicholson (Parenting Research Centre), Bryan Rodgers (Australian National University), Ann Sanson (University of Melbourne), Michael Sawyer (University of Adelaide), Lyndall Strazdins (Australian National University), Melissa Wake (Centre for Community Child Health, Murdoch Childrens Research Institute), and Stephen Zubrick (University of Western Australia). Former members are Judy Ungerer (previously Macquarie University), Sven Silburn (Menzies School of Health Research, Darwin) and Graham Vimpani (University of Newcastle).

Table 1.1: Criteria for evaluating proposed LSAC content

Construct selection	Item/measure selection
Explanatory power in relation to the articulated scientific framework	Established reliability and validity
Population relevance, in terms of burden and prevalence	Acceptability to respondents
Perceived importance to policy	Adequacy of measurement of central constructs
Amenability to change through intervention (for potential risk and protective factors)	Comparability with other international or national studies
	Lack of redundancy (data not available elsewhere)

From Sanson, Nicholson, Ungerer et al., 2002.

For the parenting domain, selection of measures was guided by:

- contemporary theory regarding the elements of parenting and parent–child interactions that influence children's health and development
- scans of similar international cohort studies and Australian child development studies to identify tools and items previously used and
- scans of the broader cross-sectional and intervention research to identify other emerging constructs or tools for consideration.

The following section provides a description of this process.

1.3 Conceptual model of parenting

'Parenting' is broadly recognised as referring to parent–child interactions and parents' child-rearing activities that shape children's development (Davies, 2000). As a first step in determining how to measure parenting within LSAC, the Family Functioning Design Team undertook a conceptual mapping of the ways in which parents influence their children's development. As shown in Figure 1.1: Conceptual map of parenting influences on children's development, parents were regarded as influencing their children's development via:

- the time that they spend with their child
- the nature of the activities undertaken during this time
- the physical and environmental resources provided (e.g. books, toys)
- the emotional resources provided (e.g. parent mental health)
- their interpersonal interactions with their child
- their beliefs, attitudes and expectations for themselves as parents (self-efficacy) and for their child (expectations) and
- the manner in which couples support or undermine each other in their child-rearing (co-parenting).

This map (Figure 1.1) was used as a reference for checking which elements of parental influence were being captured in other parts of the study. For example, parental time with children was measured in the Child Time Use Diary; parent engagement in learning activities, learning resources in the home and parents' expectations for children's academic achievements were assessed in the Education domain; and parent mental health, coping and time pressure were assessed in the Health domain. The key elements that remained discretely within the Parenting domain were: parent–child interactions, self-efficacy and co-parenting[3].

[3] Validation of the co-parenting measures was beyond the scope of the current report and these measures are not described further.

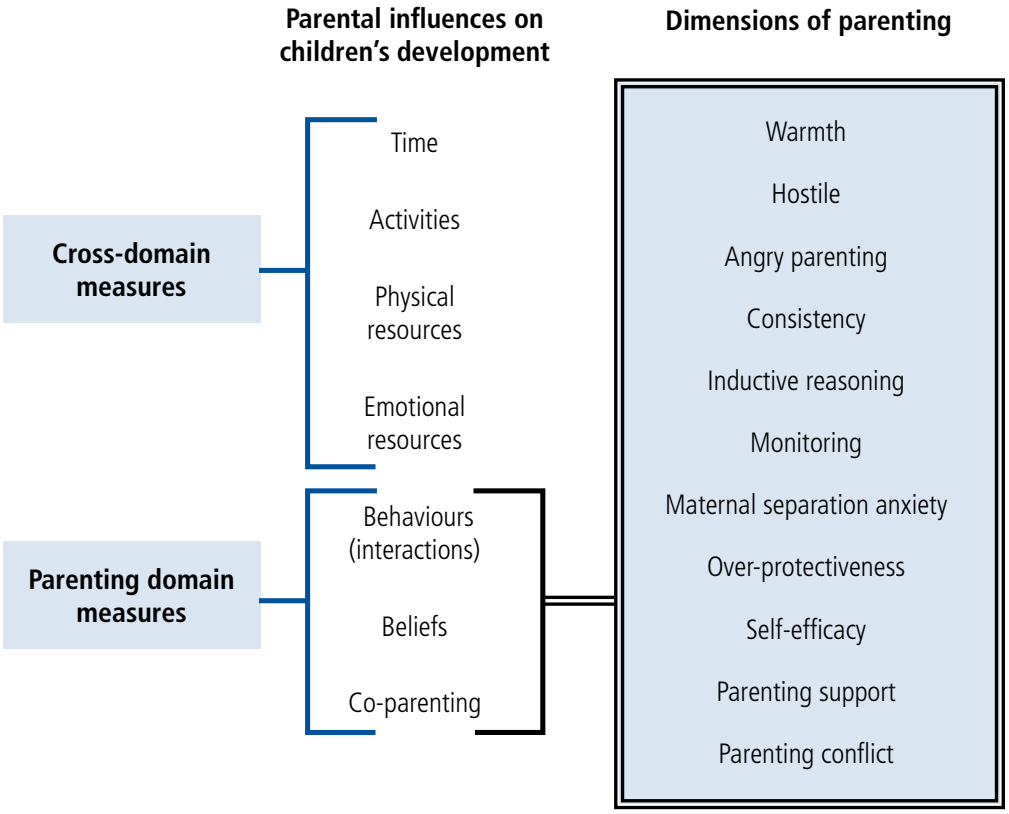

Figure 1.1:Conceptual map of parental influences on children's development

In the initial work undertaken by the Family Functioning Design Team, three key challenges were encountered in identifying a comprehensive yet parsimonious set of items for assessing self-reported parent–child interactions and parenting self-efficacy. First, at the construct level, the parenting literature is characterised by a plethora of terms used to describe the elements of parenting and a marked lack of consistency in how these elements are defined. A recent narrative review of parenting has attempted to draw this literature together and identified three hierarchical levels for defining parenting—practices, dimensions and styles, terms that were previously used in a largely interchangeable manner (Jansen, Daniels, & Nicholson 2012).

Parenting practices are the **specific behaviours** that parents use in their interactions with their child. These include, for example, using reprimands, giving praise, showing physical affection and setting rules for behaviour (Bornstein & Zlotnik, 2009; Walker & Kirby, 2010).

Parenting dimensions refer to **unidimensional constellations of behaviours** and attitudes which tend to co-occur (Jansen et al., 2012). Many dimensions of parenting have been shown to influence child development, although different terms are often used to describe overlapping or similar constructs. Common examples include:

- *warmth* or responsive parenting—displays of affection, awareness of child's needs
- *angry* or irritable parenting—feelings of anger or frustration towards the child and emotional reactivity
- *hostile*, controlling or over-controlling parenting—negativity, use of physical discipline, rigid enforcement of rules and expectations
- *consistency*—the setting and consistent application of age-appropriate rules and expectations
- *inductive reasoning* or autonomy-encouragement—behaviours that help children to learn rules, master tasks in achievable steps and make choices
- *monitoring*—steps taken to ensure children's safety and responsible behaviour

- *over-protectiveness* or over-anxious parenting—behaviours that involve too much instruction, restriction and support relative to the child's capabilities and
- *parenting self-efficacy*, self-confidence or self-concept—parents' perceptions of their confidence in and mastery of parenting skills.

Generally, children show better developmental outcomes when exposed to parenting that is high on the dimensions of warmth, consistency, inductive reasoning and self-efficacy and low on the dimensions of irritability, hostility and over-protectiveness (Bayer et al., 2011; Berk, 2001; Bradley, Caldwell & Rock, 1998; Chang, Schwartz, Dodge & McBride-Chang, 2003; Chao & Willms, 2002; Paterson & Sanson, 1999; Pettit & Bates, 1989).

Parenting styles are **multidimensional categories of behaviours and attitudes** which classify parents according to where they lie on the distributions of some specific parenting dimensions (Darling & Steinberg, 1993). One of the most well-known classifications of parenting style is that applied by Baumrind and others (Baumrind, 1991; Darling & Steinberg, 1993; Maccoby & Martin, 1983) defining 4 parenting styles based around levels of over-controlling and responsive parenting: authoritative (high control, high responsiveness), authoritarian (high control, low responsiveness), indulgent/permissive (low control, high responsiveness), and uninvolved/neglectful parenting (low control, low responsiveness). In the Anglo population in Western societies, authoritative parenting has been most consistently associated with positive socioemotional competence, cognitive and health outcomes in children (Baumrind, 1991; Bornstein & Zlotnik, 2009; Jackson, Henriksen & Foshee, 1998; Smith, 2011).

In addition to the challenge of identifying which constructs to measure, the Family Functioning Design Team faced the challenge of how to measure these constructs parsimoniously. A wide variety of questionnaires and scales have been used to assess parenting. While research with clinical populations (e.g. the parents of children with conduct disorder) shows some consistency in the measurement tools used, these are often lengthy instruments with a focus on negative aspects of parent–child interactions, limiting their suitability for population studies. Numerous self-report scales in the broader developmental and population research are also available—however, these tools lack consistency in the constructs assessed, the names applied to each construct and the items used to measure them.

A final difficulty concerned developmental appropriateness. Initially, measurement development was to cover the first 4 waves of LSAC, spanning ages 0–1 years to 6–7 years for the B cohort and 4–5 years to 10–11 years for the K cohort. This presented a challenge because some dimensions of parenting are not applicable at all ages (e.g. inductive reasoning is not applicable in infancy), and specific parenting behaviours may be appropriate at some ages but not others (e.g. leaving the child alone in their room may be an appropriate discipline strategy for a preschooler, but not for an infant). As a result, both the broader parenting constructs and the specific items used to assess them needed to be mapped against the ages of intended use.

1.4 Selection of the parenting constructs and items included in LSAC

In light of these challenges, the Family Functioning Design Team adopted an approach which aimed to achieve breadth and flexibility in the measurement of well-defined, discrete constructs. The following decisions underpinned this process.

The first decision was to assess parenting *dimensions*, as opposed to styles. This maximised conceptual clarity and enabled a broad range of parenting constructs to be assessed. In addition, it provided LSAC data users with the option to combine specific scales as desired to create composite measures of parenting style (see, for example, Wake, Nicholson, Hardy & Smith, 2007). The selected parenting dimensions were mapped developmentally to determine the ages when measurement was most appropriate. In general, the Design Team included dimensions that were relevant across multiple waves of data collection.

Eight dimensions of parenting were assessed across waves 1 to 4: warmth, anger, hostility, consistency, inductive reasoning, monitoring, over-protectiveness and self-efficacy. All selected dimensions were assessed via self-report for P1. Those dimensions which past research indicated were most strongly and consistently linked to children's outcomes were also collected from P2 and PLE. A ninth parenting dimension, maternal separation anxiety, was included for mothers only in Wave 1 for the B cohort. This

was recommended for inclusion by the Child Care Domain Team as a factor likely to influence mothers' decisions regarding their return to employment and use of child care. At a conceptual level, maternal separation anxiety was considered to be a potential early manifestation of over-protective or over-anxious parenting.

In the Family Functioning Design Team's review of the existing measures of parenting, no single questionnaire was identified that assessed all of the identified parenting dimensions. Existing measures and subscales were compiled and examined for appropriateness against the overarching measurement selection criteria listed in Table 1.1. When reviewing potential items for inclusion, psychometric data from available literature and/or the researchers' own datasets were examined. The aim was to identify a brief set of items (up to 6 items per dimension) that were the strongest indicators of the underlying construct.

While striving to maintain cross-wave consistency in the overall construct being measured, some new items were added to measures as these become developmentally relevant, some items were dropped, and in one case (self-efficacy), a completely different item set was used for younger versus older children. Where possible, a core set of items was carried through the ages to facilitate longitudinal analyses, and, in the case of self-efficacy, an additional single item 'global rating' was included at all waves.

A summary of the parenting constructs assessed across waves 1 to 4 is presented in Table 1.2. Specific items assessed at each wave are provided later in the results section for each measure.

Table 1.2: Summary of parenting measures collected at each wave by cohort and respondent

Parenting dimension	Source of items	No. items	Waves for B cohort	Waves for K cohort	Respondent
Warmth	Child Rearing Questionnaire (Paterson & Sanson, 1999)	5	1–4	1–4	P1, P2, PLE
Hostility	Early Childhood Longitudinal Study of Children—Birth Cohort (US Department of Education, 2001)	4	1–4	2–4	P1, P2
Anger	National Longitudinal Study of Children & Youth (Statistics Canada, 2000)	4–5	3, 4	1–4	P1, P2
Consistency	National Longitudinal Study of Children & Youth (Statistics Canada, 2000)	5	3, 4	1–4	P1, P2, PLE
Maternal separation anxiety[a]	Maternal Separation Anxiety Scale (Hock, McBride & Gnezda, 1989; Hock & Schirtzinger, 1992)	6	1		Mothers
Over-protectiveness[b]	Parenting practices scales (Bayer, Sanson & Hemphill, 2006)	3	2–4	2–4	P1, P2
Inductive reasoning	Child Rearing Questionnaire (Paterson & Sanson, 1999)	3–5	2–4	1–4	P1, P2, PLE
Self-efficacy Caring for an infant[c]	Early Childhood Longitudinal Study of Children—Birth Cohort (US Department of Education, 2001)	4	1		P1, P2
General parenting	Early Childhood Longitudinal Study of Children—Birth Cohort (US Department of Education, 2001)	4	2–4	2–4	P1, P2
Global rating[b]	Early Childhood Longitudinal Study of Children—Birth Cohort (US Department of Education, 2001)	1	1–4	1–4	P1, P2, PLE

[a] While maternal separation anxiety was only measured at W1 for mothers, model fitting was undertaken for this variable.
[b] Measurement properties not examined due to insufficient items (<4) for fitting congeneric models.
[c] Measurement properties not examined as the variable was not carried forward longitudinally.

2. Measurement error and reliability

2.1 Basic principles

Measurement reliability refers to a range of procedures that may be carried out to assess how well items measure what they are designed to measure. The extent to which multiple items within a scale assess the same underlying construct, and with the same accuracy, is broadly referred to as scale reliability, internal reliability or internal consistency. In this monograph we will use the term *scale reliability* to denote this. If scale reliability is low, such that some items in a scale do a poorer job of assessing the underlying construct than others, then the overall usefulness of the scale as a measure of that construct is reduced. This can be a particular problem when the scale is derived from a small number of items, as there is less 'common ground' for the items to capture. The reliability of the scale may be improved in some cases by removing items that are poor indicators of the construct, or by using item weightings that adjust for the degree of measurement error associated with each item.

Measurement error. LSAC measures parenting using survey questions. Consistent with all survey research, this measurement approach involves the use of empirical indicators (e.g. *items*) to assess abstract theoretical constructs. Generally, parents were asked a set of questions about how often they engage in particular parenting behaviours. This process inevitably involves a degree of error, as the items in each scale will not perfectly capture the underlying parenting dimension. Investigating the extent of measurement error that occurs at an item level is important because it allows us to assess how confident we can be that our empirical indicators measure the underlying constructs. If error is small, such that there is a good fit between the indicators (items) and their underlying constructs, then the parenting measures can usefully inform us about the relationships between parenting and other constructs, such as child wellbeing. If the error is large, however, analyses using the parenting measures have the potential to result in incorrect inferences and misleading conclusions.

Measurement error associated with items and their underlying constructs can take a number of forms. In the current report, we have examined three types of measurement error within the LSAC parenting measures. These are *random measurement error*, *non-random (*or *systematic) measurement error*, and *measurement invariance over time*. *Random errors* are those that influence measurement in an unpredictable way (such as participant mood), while *non-random errors* are those that are in some way systematic (such as consistent under- or over-reporting by parents). Modelling techniques used in this report allow us to estimate some of the random and non-random errors associated with each item from the parenting scales, although not all sources of error can necessarily be separated out. *Measurement invariance over time* refers to the degree to which the parenting measures at one timepoint assess the same things, and with the same precision, as they do at other timepoints. This is vital for longitudinal analyses because it allows us to assess the likelihood that changes observed over time are due to actual developmental change, rather than measurement error. If parental warmth substantially declined during adolescence, for example, it would be important to determine whether this was a true effect or just reflective of parents expressing warmth differently at this age. In this report we present some broad indicators of measurement invariance over time by examining the correlations between parenting constructs at each wave.

2.2 Data properties

Ordinal data

Variables in a data set can take a number of different forms. The LSAC parenting variables are *ordinal variables*, meaning that their scale values imply a relative ranking or ordering of observations: a score of 5 implies greater parental warmth than a score of 4. Ordinal variables contrast with *nominal* variables which categorise observations without any implication of order or hierarchy. An example of a nominal variable would be coding gender observations as 1 = Female and 2 = Male, where the values of 1 and 2 do not imply changing magnitude but simply label (i.e. name) the two different groups. It is also important to note that ordinal scales are distinct from *continuous* scales: while continuous scales can theoretically take any possible range of numerical values, ordinal scales are restricted to a subset of values, such as

the values 1 to 5 for each of the parental warmth items. Different types of variables require different methods of data analysis—while it would be nonsensical to calculate a mean gender, calculating a mean parenting score could be very informative.

Non-normally distributed data

Many statistical techniques rely on the assumptions derived from the Normal Theory in order to make statements about the probability of observing specific events and their generalisability to the population. This applies also to the distributional characteristics of items, where most statistical approaches assume items to demonstrate an approximately normal distribution: a symmetric, bell-shaped distribution that characterises many naturally occurring phenomena. A good example of a normal distribution is the distribution of people's heights, as shown in Figure 2.1. In this figure the most common height is 170 cm, and the number of people with other heights decreases, symmetrically, as we move away from 170 cm in either direction. Importantly, for statistical purposes, the rate of this decrease relates to the standard deviation of the variable, such that 68.3% of the population will have scores within one standard deviation of the mean, 95.4% within two standard deviations from the mean and 99.7% within three standard deviations from the mean. This pattern makes it possible to assess how likely it is that a sample population accurately represents its true population, and this is the basis for many statistical techniques.

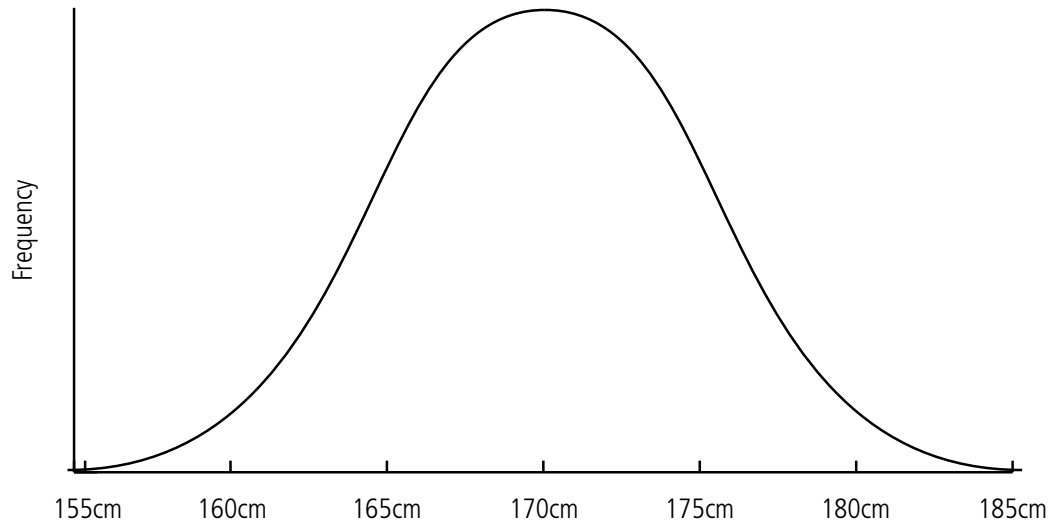

Figure 2.1:An example of a normal distribution: height distributions

However, most of the parenting measures in LSAC are not normally distributed. On the whole, parents in the general population report good parenting. For the positively constructed variables (e.g. warmth) this results in a 'bunching-up' of responses at higher values with a long tail pointing to the left (i.e. a negative skew), with the opposite pattern (i.e. a bunching-up at the lower values) for negatively constructed variables (e.g. anger). Many statistical techniques are therefore unsuitable for use with the LSAC parenting measures.

Longitudinal data

A key strength of LSAC is its longitudinal design in which information is collected from the same sample at multiple time points. Measures of parenting in LSAC are collected every 2 years. This design allows researchers to track developmental changes over the life span using the same people. Compared to cross-sectional studies of different age cohorts, this method reduces the likelihood that observed differences are the result of differences between cohorts. Longitudinal studies also allow us to identify the time points at which behaviours or conditions emerge, and whether they change over time—for instance, we are able to identify the age at which parents start disciplining their children and whether the way they do this changes as children get older. This also enables precursors and potential causes of behaviours/conditions to be identified—if inconsistent discipline precedes childhood behaviour problems, for instance, this suggests a causal pathway which can be tested empirically through other research.

3. Methods used in this report

3.1 Structural equation modelling

The principal statistical approach used in this monograph to examine the properties of the LSAC parenting measures is Structural Equation Modelling (SEM). This chapter describes the key steps undertaken in SEM. Readers are also referred to Appendix A: Frequently asked questions for summary information.

There are two broad processes in SEM. The first involves the measurement of the constructs of interest (*factors*), and the second involves the estimation of the structural components of the model, that is, the relationships between the factors in the model. Within the first process, confirmatory factor analysis (CFA) is used to estimate the measurement properties of items and their composite scales. Initially, CFA is used to fit one-factor *congeneric* measurement models. These are models in which responses (i.e. scores) on a number of observed variables (i.e. items) are combined to measure an underlying non-observed *factor*—sometimes referred to as a 'latent variable' or a 'construct'.

Once the measurement properties of the factors are estimated it is possible to use these estimates to create composite measures for use in a variety of analytic procedures. These composite measures are not simple 'additive' sums of the scores on the observed items. Congeneric models allow for the estimation of (1) the individual error variances for each item, (2) the shared error variance between items and the factor and (3) the error variance of the factor. The estimation process permits a test of statistical 'goodness of fit' using a variety of approaches. These assess how well the hypothesised one-factor congeneric model fits the actual observed data. Under some circumstances (for example, assessing the qualities of item pools for subsequent improvement and use) diagnostic statistics can be used to adjust the model to enhance fit through post-hoc re-specification. Importantly, a well-fitting one-factor congeneric model provides a set of valid items with weights which can be used to form composite scores with known measurement properties for use in later analyses.

A fundamental requirement of structural equation modelling (SEM) is that the models have one, and only one, possible mathematical solution. In other words, the models need to be mathematically 'identified'. This is because SEM measurement models can contain several equations that require solving simultaneously. This is true for all SEM models and identification can be particularly challenging where models are complex and contain a mix of measurement and structural parameters that require simultaneous solution. Fortunately, the measurement models being estimated in this monograph are simple models involving one factor and a number of items as hypothesised indicators. While one-factor congeneric models must theoretically include a minimum of only two observed items, it is not possible to fit two-item models in practice because the equations to be solved do not contain sufficient known parameters (such as observed items) to estimate the unknown parameters. Such models are known as 'unidentified' models and require additional parameters to be fixed (i.e. specified) by the researcher. A related problem also arises with three-item models. These models are 'saturated', that is, they contain the same number of known and unknown parameters. Saturated models perfectly fit the data and are not informative in terms of actually testing the fit of the model. **Models estimated in this monograph were therefore restricted to those that had at least four items per underlying construct.** Procedures for identifying the models tested in this monograph follow those outlined by Jöreskog and Sörbom (1989, p. 86).

The one-factor congeneric measurement model is described below (Jöreskog and Sörbom, 1996, pp. 124–5) as follows:

$$X_i = \lambda_i \xi_1 + \delta_i$$

where,

X_i—observed variables (i.e. items)

ξ_1—unobserved latent variable (e.g. a factor)

δ_i—measurement errors in X_i

λ_i—regression coefficients in the relationships between each of the observed variables (X_i) and the unobserved ξ_1.

The path diagram is a useful way to graphically display the pattern of relationships among sets of observed and unobserved variables (Dillon & Goldstein, 1984).

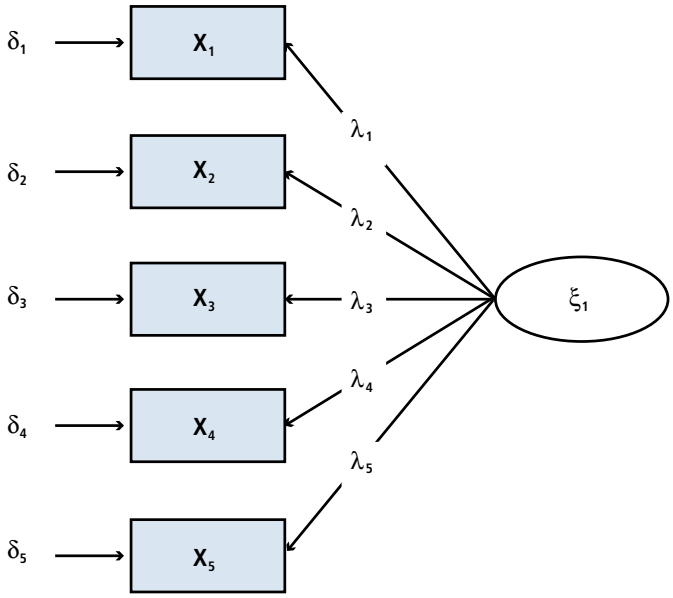

Figure 3.1:Path diagram of a one-factor congeneric measurement model

3.2 The use of composite measures

Composite measures allow for a complex construct (or *factor*) to be estimated using multiple items from a questionnaire or a direct assessment tool and converted into a single scaled score. Composites are widely used outside of SEM settings. There are a number of advantages associated with deriving composite measures. Generally speaking, a composite measure reduces the number of parameters to be estimated in any given model, improving parsimony by simplifying the model that is being estimated. Pragmatically it is easier to refer to one composite variable than the 6 items that measure it. Statistically, there may also be advantages to reduce the number of variables in a model to something more manageable. In non-SEM contexts, it is often not possible to estimate the measurement model of a given factor while simultaneously estimating structural relationships between the factor of interest and other factors. In these instances, it is necessary to derive a composite measure.

At the simplest level, composite scores are derived by summing all items together to form a total score. This is referred to as a *parallel* model. The underlying assumption of a parallel model is that each item contributes equally to the factor being estimated and that the error variances associated with each of the items are approximately equal. However, these conditions may be difficult to satisfy in reality; it is often the case that items vary in how much they contribute to a given factor, meaning that a simple addition of the item scores will result in an incorrect estimate. In contrast, as described above, a *congeneric* model allows items to vary in the extent to which they contribute to a factor (see Appendix A: Frequently asked questions, question 4 for more detail). It is possible to construct a composite score accounting for these kinds of differences.

A variety of methods have been proposed to achieve this outcome; we discuss here the method proposed by Holmes-Smith and Rowe (1994). In this method, the composite score is derived using item factor score regression weights, which are estimated as part of the confirmatory factor analysis (CFA) process, as described above. Instead of assuming that each item contributes equally to the factor, this approach adjusts the weighting of each item on the factor. One of the consequences of this approach is that in undertaking the weighting procedure the original scaling properties of the ordinal items may be transformed or standardised. This makes the scale of the calculated composite difficult to interpret meaningfully. To address this, it is possible to re-scale the new composite using *proportionally adjusted factor scores* to

benchmark the new composite score back to the original ordinal scale of the items. Proportionally adjusted factor score regression coefficients will add to a total score of 1. To derive the composite score using this method, items (raw data) are simply multiplied by the corresponding proportionally adjusted factor score regression coefficients. (For more detail see Appendix A: Frequently asked questions, questions 1 and 6).

3.3 Estimating models with ordinal data

Most researchers in applied statistics think in terms of modelling *individual* observations. In multiple regression analysis or ANOVA (Analysis of Variance), regression coefficients or the error variance estimates are derived from the minimisation of the sum of the squared differences between the predicted and observed dependent variable for each individual observation (Bollen, 1989). In contrast to this approach, structural equation modelling emphasises *covariances* rather than cases. Rather than minimising functions of observed and predicted *individual* values, structural equation modelling minimises the difference between the sample (i.e. observed) covariances and the covariances predicted by the model. 'Residuals' are parameters representing the difference between the observed covariances and the predicted covariances. A critical assumption in structural equation modelling is that data are continuous (i.e., in the form of interval-scale data), which has resulted in the majority of SEM estimation techniques assuming an underlying normal distribution of data.

However, rather than being interval level measures, most of the LSAC items are coarsely ordinal ('categorical') and markedly non-normal in their distribution. The analysis of non-normally distributed and/or ordinal level data using SEM methods is problematic and the subject of ongoing statistical debate. Jöreskog and Sörbom (1989; 1996) note that when some or all of the variables to be analysed are discrete or ordinal variables then it is a misuse of SEM methodology to: (1) assume these scores have interval scale properties, (2) compute a covariance matrix or a product-moment matrix for such scores, and (3) analyse such matrices using Maximum Likelihood methods (Jöreskog & Sörbom, 1989, p. 92). Under these circumstances, Jöreskog and Sörbom propose using polychoric or polyserial correlations to replace covariances or Pearson correlations, and to assess the fit of models using such data via weighted least squares (WLS) with an appropriate weight matrix.

Hayduk (1987) is more cautious in his enthusiasm for such an approach, noting that the replacement of product moment correlations may be most prudent where the categorisation process of the items has produced oppositely skewed categorical distributions in the items that serve as indicators of the underlying concepts. West, Finch and Curran (1995) in their review of structural equation modelling with non-normal variables note that factor loadings and factor correlations are subject to under-estimation particularly where there are few categories (2 or 3), the distributions are skewed (e.g. > 1.0) and there is differential skew across the items (West et al., 1995, p64). In a re-assessment of the analysis of ordinal data, Hayduk (1996) concluded that while the analysis of ordered categorical data with maximum likelihood (ML) methods has returned results 'better than anticipated' (page 213), he concluded that coarsely ordered categories require use of procedures other than ML for estimation.

In more recent times, the debate about the recommended SEM estimation approach for non-normal ordinal data has benefited from more intense study, practical experience, and improved statistical software (see, for example, Hancock & Mueller, 2006). Four estimation methods for use when data are non-normal (i.e. skewed and/or kurtotic) or ordinal/categorical have featured prominently: (1) Asymptotically Distribution-Free (ADF) estimation (which can be used with categorical or continuous data), (2) Robust Maximum Likelihood with Satorra-Bentler scaled χ^2 and standard errors, (3) Robust Weighted Least Squares (WLS, WLSM, WLSMV) estimation and (4) Bootstrapping. Several circumstances influence researchers in their choice among these estimation techniques. These circumstances include (1) the extent to which the variable distributions violate Normal Theory assumptions thus making maximum likelihood methods hazardous (2) sample size, (3) availability of software to undertake the estimation technique of choice and (4) training and experience.

Choice of the appropriate estimation method for categorical data ultimately involves inspecting the distributions of the candidate items and the sample size. Statistical software may also pose limitations or dictate the choice of the approach—not all estimation methods are available in all types of software, and the software may not produce the range of recommended fit measures. This makes the practitioner's task particularly challenging.

Finney and DiStefano (2006) review the practical issues that govern the choice of estimators for non-normal ordinal or categorical data. The use of the ADF estimator with Weighted Least Squares for analysing categorical data has been a recommended approach for many years. However, ADF-WLS estimation requires very large sample sizes and has been criticised for its insensitivity to model misspecification (see Olsson et al., 2000). Robust Weighted Least Squares (WLSM, WLSMV) has been found to overcome many of the limitations of ADF-WLS estimation (Flora & Curran, 2004). At the time of writing, ADF-WLS estimation was available in statistical software such as LISREL, MPlus, and AMOS. In contrast, WLSM and WLSMV was initially developed and implemented in MPlus, and in late 2012 LISREL implemented a robust mean and variance adjusted method for WLS and DWLS estimation. Other statistical packages such as Stata and R also provide varying degrees of accessibility to these procedures and outputs.

3.4 Approach used in this report

Estimation method

The distributions of item data from LSAC show the majority of the items to be ordinal. Some are restricted to only 3 possible response categories and with markedly non-normal distributions. Many item distributions are skewed or U-shaped, and in some instances show low (< 5%) response categories that effectively become zero in some sub-samples. In addition to being skewed, many of these item distributions are also markedly kurtotic—a circumstance that particularly affects approaches based on Maximum Likelihood (ML). Under the assumptions of Normal Theory, standard Maximum Likelihood estimation with a covariance matrix is not warranted, and use of a more appropriate estimation method is required.

However, the LSAC sample is also large—evaluation of the extensive item sets across Waves 1–4 resulted in sample yields typically N > 3000 and under some circumstances N > 4000. This permitted an assessment of differences in the estimation results under the assumptions of ADF-WLS (using LISREL) and WLSM and WLSMV using Mplus (Zubrick, 2009). Across the range of variables assessed in this report, no substantive difference in the fit of the various models was noted using these methods. Because of the ease of generating factor score regression weights for use in calculating composite scores in LISREL[4], our estimations in this report use polychoric correlations with a weight matrix derived from the inverse of the asymptotic covariances as input to ADF weighted least squares estimation (ADF-WLS). The polychoric correlations are not particularly useful as input matrices on their own without the (vast) matrix of asymptotic covariances. As a result, neither is provided in this report.

Methods for determining model fit

Having determined that ADF-WLS estimation would be undertaken, it was then necessary to decide the approach for determining model fit. Similar to the challenges in deciding the estimation method, determining model fit is also contentious. A variety of fit indices is available from most SEM software packages. These indices are variously sensitive to model misspecification, sample size (e.g. particularly small samples N <= 250), estimation method and the effects of violating Normal Theory (Hu & Bentler, 1998; Hu & Bentler, 1999; Olsson et al, 2000). In fact, in a recent and dispiriting review Heen et al. (2011) concluded that '. . . the cut-off values cannot be interpreted as golden rules or even given as a fixed value independent of the data given' (p. 330).

The selection of appropriate fit indices for SEM has been extensively reviewed notably by Hu and Bentler (1995; 1998; 1999) and Yuan and Bentler (1997). Once again, there is a preponderance of recommendations for ML methods (1999) over other methods. A 'combinational' rule, in which two or possibly three fit indices are used to judge model fit, is recommended. The selection of the recommended fit indices is reliant upon sample size, distributional characteristics of the data, and model complexity. Once again, recommendations for other (non-ML) estimators are more scant. However, Hu and Bentler suggest the use of the Standardized Root Mean Residual (SRMR) supplemented with one of either the NNFI, (Non-Normal Fit Index; also called the TLI, Tucker-Lewis Index), BL89 Fit Index (Bollen, 1989)

[4] Factor score regression weights are not provided in the MPlus implementation of WLSM and WLSMV with categorical data.

or the Comparative Fit Index (CFI) (Hu & Bentler, 1998) with the ADF method. They go on to note that different cut-off criteria are needed under varying conditions (e.g. sample size), and leave this for researchers to specify.[5]

Model fitting procedure

With these complexities in mind we proceed as follows. All item distributions were inspected for missing data and outliers prior to model specification. Each model fitted has been fitted on complete (non-missing) data. Model specification was undertaken with reference to the theoretical and practical rationales for their inclusion in the design of LSAC. In this sense, all models fitted here have been specified *a priori*. Congeneric models were specified for each set of items, and polychoric correlations along with their respective asymptotic covariance matrix were input to LISREL 8.8 and estimated via ADF-WLS. All models were identified using the procedure outlined by Jöreskog and Sörbom (1989, p. 86).

Each fitted model is presented in tabular form (Appendix B: Final recommended structural equation models for final recommended models; Appendix C: Initial model fits for models that failed to achieve fit criteria and/or were refitted for initial fitted models) with the following information:

a) a table with the LSAC item variable name and the exact wording of the item (column 1)

b) the factor item loading (column 2)

c) item factor score regression weights (column 3): we present the unadjusted and then the proportionally adjusted (in italics) factor score regression coefficients, either of which may be used to weight the original items to form a composite score. We chose to use the proportionally adjusted factor score regression coefficients to calculate the composite scores because proportional adjustment results in a composite scale that takes the same range as the original item pool.

d) model fit characteristics (column 4). Our choice of fit indices takes into account the following properties of the data: (1) initial model complexity—all models here are considered 'simple' one-factor congeneric models with 4to 6 indicator items with uncorrelated error, (2) sample sizes are large with most samples in excess of N = 3500, (3) item distributions violate assumptions of normality by a high degree with the resultant selection of the ADF-WLS estimator. Table 3.1 summarises the model fit indices used in this report. The principal model fit index used in this report is the SRMR < 0.10. This index is most sensitive to model misspecification in simple models (as opposed to misspecification in complex models) and is not sensitive to the model estimation method where sample sizes are large. The SRMR is used in conjunction with one of two other indices: (1) the NNFI (or TLI as it is also known) > 0.95. The NNFI is moderately sensitive to simple model misspecification, less sensitive to distributional properties and sample size. (2) With ADF-WLS bigger samples (>= 250) are recommended, or the CFI > 0.95. Under large sample ADF-WLS the CFI shares similar characteristics to the NNFI (Hu & Bentler, 1998) (Weston & Gore, 2006).

e) as is conventional, we provide the Chi Square goodness of fit measure and its associated degrees of freedom. However, as Chi Square is overly sensitive to very large sample sizes and prone to rejecting the null, this is not employed here to determine model fit.

[5] For readers accustomed to reporting the Root Mean Squared Error of Approximation (RMSEA) in SEM models, the RMSEA is not recommended for use in ADF based methods (Hu and Bentler, 1998, p. 447). If RMSEA is used with WLS then choosing a higher threshold is recommended (Olsson et al., 2000).

Table 3.1: Goodness-of-fit statistics: summary of minimum guidelines

Measure	Criterion used
Standardised Root Mean Residual (SRMR) Bentler, 1995 Hu and Bentler, 1998	SRMR < 0.10 SRMR is the average difference between the predicted and observed variances and covariances in the model, based on standardised residuals. A value of zero indicates perfect fit. This measure tends to be smaller as sample size increases and as the number of parameters in the model increases. A value less than 0.05 is considered a good fit and below .10 an adequate fit.
Non-Normed Fit Index (NNFI/TLI) Tucker and Lewis, 1973	NNFI > 0.95 Also referred to as the Tucker-Lew Index (TLI), the NNFI should have a value between 0.90 and 0.95 to be deemed 'acceptable', and above 0.95 to be deemed 'good'.
Comparative Fit Index (CFI) Hu and Bentler, 1995	CFI > 0.95 Relatively insensitive to sample size, the CFI tests the proportionate improvement in fit by comparing the target model with the independence model, and a value approximating zero. A value between 0.90 and 0.95 is acceptable, and above 0.95 is good.

In addition to these measures of model fit, the H-index of scale reliability (Hancock & Mueller, 2006) is also calculated. This is a measure of the *proportion of variance* accounted for in the underlying factor and is selected for reporting here rather than the traditional Cronbach's alpha. The H-index is the preferred indicator of scale reliability for ordinal measures (see Hancock and Mueller, 2006). It represents the squared correlation (i.e. variance) between the underlying latent construct (i.e. factor) and the optimum linear composite formed by its indicators (i.e. items). Broadly speaking, magnitudes of H >= 0.80 are considered desirable with respect to scale performance.

Interpretation of models

Each model is presented in the Appendices along with a general summary of model adequacy. Models were judged as follows:

a) good: model meets all three specified criteria (Table 3.1) for the SRMR, NNFI and CFI

b) acceptable: model meets SRMR criteria and at least one of either the NNFI or the CFI criteria

c) not acceptable: model fails to meet the SRMR criteria or model meets the SRMR criteria but does not meet the criteria for both the NNFI and the CFI.

Where the fit indices meet specified criteria, the table entries are in bold type. Models that are deemed good or acceptable are likely to meet essential criteria for use in constructing composites for application in a range of statistical modelling.

We would encourage researchers to examine the presented models and their specifications, model estimates, and fits with respect to their requirements or those imposed by peers and reviewers. Our responsibility here is to make clear our basis for judging model fit. Ultimately, however, this remains the responsibility of all researchers who undertake work with these data. Fortunately, the data are available for those who wish to undertake their own investigations and we would certainly invite this.

Finally, and before turning to the results, we would note that the models presented here are estimated by Wave by Cohort by Parent, but otherwise are not differentiated by other subgroup characteristics (e.g. child's gender, sibship position etc.) As such, the models here present an overview of construct validity and scale reliability. Researchers interested in factor invariance between subgroups are encouraged to specifically test these assumptions. Moreover, subgroup analysis may require consideration of other estimators (e.g. particularly robust estimators) where sample sizes decrease from those used here.

4. Results

In LSAC, while Parent 1 (P1) is usually the child's mother, and Parent 2 (P2) is usually the child's father, this is not always the case. The LSAC data provides variables for mothers and fathers in addition to those for P1 and P2. We used the 'mother' and 'father' variables in this report in order to align our results with the broader parenting literature, which tends to discuss parenting according to parent gender, rather than by primary vs. secondary carer status. In these variables 'mothers' include any resident female parent/guardian and 'fathers' include any resident male parent/guardian. While these groups include biological parents in the vast majority of cases, they may also include step- or foster parents, aunts/uncles, grandparents etc.

4.1 Within wave reliability

Table 4.1 summarises the results of initial modelling. The 7 dimensions of parenting for mothers and fathers across 2 cohorts and 4 waves generated a total of 69 models. A total of 20 (30%) were a 'good' fit (i.e. met the criteria for all 3 fit indices), 26 (38%) were an 'acceptable' fit (i.e. met criteria for SRMR and for either NNFI or CFI) and 23 (33%) failed to meet the specified fit criteria. Model fits varied across waves and respondents. Parental warmth, hostility and inductive reasoning exhibited acceptable to good fits throughout. In contrast, parenting consistency exhibited uniformly unacceptable fit. Parental anger and parenting efficacy, on the other hand, varied more markedly by respondent and wave.

We undertook model modifications for all models that failed to meet basic fit criteria. This was done systematically by applying the following method:

a) Item distributions and characteristics were reviewed for each model that failed to meet fit criteria. Particular attention was paid to those (rare) circumstances where tests of bivariate normality (a requirement for onward modelling) failed.

b) Item loadings and item errors were examined for evidence of poor or uneven explanatory association by the underlying factor.

c) Residuals and modification indices were examined.

d) Where there were 5 or more items fitted to a model, and where the current fit was unacceptable, our first line of modification entailed deleting a weak item in an attempt to resolve the model fit. This proved successful in all instances where this was possible.

e) Where there were 4 items only, item deletion was not undertaken because the models would become completely saturated. Instead, we examined modification indices to determine the likely cause of poor fit. As these models were single factor models this inevitably resulted in freeing a path for correlated item error. This will be discussed in the relevant summary sections below.

Table 4.2 is a summary of the final fitted models, and each of the final models is presented in full in Appendix B: Final recommended structural equation models. We have designated (in italics) those models that required modification either to achieve acceptable fit criteria or to maintain consistency with other (refitted) models of the same construct. For models which required modification, the original models are presented in Appendix C: Initial model fits for models that failed to achieve fit criteria and/or were refitted for the information of readers.

After modification, 40 (58%) models met criteria for a 'good' fit and 25 (36%) were an 'acceptable' fit. Acceptable fit was not achieved for 4 models. Two remained 'not acceptable' (father warmth, Wave 1 K cohort; father consistency, Wave 4 B cohort) and 2 were judged to be 'not recommended' (mother and father anger, Wave 1 K cohort).

Table 4.1: Summary of congeneric model fit: initial models

Construct	Informant	Cohort	Wave 1	Wave 2	Wave 3	Wave 4
Warmth	Mother	B	Acceptable	Good	Good	Good
	Father	B	Acceptable	Good	Acceptable	Acceptable
	Mother	K	Acceptable	Good	Good	Good
	Father	K	Not acceptable	Acceptable	Acceptable	Acceptable
Hostility	Mother	B	Acceptable	Good	Acceptable	_[a]
	Father	B	Acceptable	Good	Good	_[a]
	Mother	K	_[a]	Good	_[b]	_[a]
	Father	K	_[a]	Acceptable	_[b]	_[a]
Anger	Mother	B	_[a]	_[a]	Good	Acceptable
	Father	B	_[a]	_[a]	Not acceptable	Not acceptable
	Mother	K	Not acceptable[c]	Acceptable	Acceptable	Acceptable
	Father	K	Not acceptable	Acceptable	Not acceptable	Not acceptable
Consistency	Mother	B	_[a]	_[a]	Not acceptable	Not acceptable
	Father	B	_[a]	_[a]	Not acceptable	Not acceptable
	Mother	K	Not acceptable	Not acceptable	Not acceptable	Not acceptable
	Father	K	Acceptable	Not acceptable	Not acceptable	Not acceptable
Separation anxiety	Mother	B	Acceptable	_[a]	_[a]	_[a]
Inductive reasoning	Mother	B	_[a]	_[b]	Good	Good
	Father	B	_[a]	_[b]	Good	Good
	Mother	K	_[b]	_[b]	Good	Good
	Father	K	_[b]	_[b]	Good	Good
Parenting efficacy	Mother	B	_[a]	Acceptable	Acceptable	Not acceptable
	Father	B	_[a]	Not acceptable	Not acceptable	Acceptable
	Mother	K	_[a]	Not acceptable	Acceptable	Not acceptable
	Father	K	_[a]	Acceptable	Acceptable	Acceptable

a Not measured.
b Fewer than four items.
c Violation of bivariate normality.

Table 4.2: Summary of congeneric model fit: final recommended models[c]

Construct	Informant	Cohort	Wave 1	Wave 2	Wave 3	Wave 4
Warmth	Mother	B	Acceptable	Good	Good	Good
	Father	B	Acceptable	Good	Acceptable	Acceptable
	Mother	K	Acceptable	Good	Good	Good
	Father	K	Not acceptable	Acceptable	Acceptable	Acceptable
Hostility	Mother	B	Acceptable	Good	Acceptable	_[a]
	Father	B	Acceptable	Good	Good	_[a]
	Mother	K	_[a]	Good	_[b]	_[a]
	Father	K	_[a]	Acceptable	_[b]	_[a]
Anger	Mother	B	_[a]	_[a]	*Good*	*Good*
	Father	B	_[a]	_[a]	*Good*	*Good*
	Mother	K	Not recommended	*Good*	*Good*	*Good*
	Father	K	Not recommended	*Good*	*Good*	*Good*
Consistency	Mother	B	_[a]	_[a]	*Acceptable*	*Acceptable*
	Father	B	_[a]	_[a]	*Acceptable*	*Not acceptable*
	Mother	K	*Acceptable*	*Acceptable*	*Acceptable*	*Acceptable*
	Father	K	*Good*	*Acceptable*	*Acceptable*	*Acceptable*
Separation anxiety	Mother	B	Acceptable	_[a]	_[a]	_[a]
Inductive reasoning	Mother	B	_[a]	_[b]	Good	Good
	Father	B	_[a]	_[b]	Good	Good
	Mother	K	_[b]	_[b]	Good	Good
	Father	K	_[b]	_[b]	Good	Good
Parenting efficacy	Mother	B	_[a]	*Good*	*Good*	*Good*
	Father	B	_[a]	*Acceptable*	*Good*	*Acceptable*
	Mother	K	_[a]	*Good*	*Good*	*Good*
	Father	K	_[a]	*Good*	*Good*	*Good*

a Not measured.
b Fewer than four items.
c Italicised entries indicate model modification from initial fit.

In Table 4.3 we present a summary of the scale reliabilities (Coefficient H) for all models in Table 4.2. With the exception of anger, all recommended models exceeded the desirable magnitude of H >= 0.80. For mother and father anger, 10 of the 12 final models fell below this criterion.

Table 4.3: Scale reliabilities (Coefficient H): final recommended models

Construct	Informant	Cohort	Wave 1	Wave 2	Wave 3	Wave 4
Warmth	Mother	B	0.92	0.95	0.95	0.96
	Father	B	0.93	0.95	0.95	0.95
	Mother	K	0.93	0.95	0.95	0.95
	Father	K	0.92	0.95	0.94	0.95
Hostility	Mother	B	0.89	0.85	0.85	_[a]
	Father	B	0.90	0.92	0.85	_[a]
	Mother	K	_[a]	0.90	_[b]	_[a]
	Father	K	_[a]	0.91	_[b]	_[a]
Anger	Mother	B	_[a]	_[a]	0.75	0.78
	Father	B	_[a]	_[a]	0.76	0.77
	Mother	K	0.72[c]	0.79	0.77	0.81
	Father	K	0.72[c]	0.76	0.77	0.80
Consistency	Mother	B	_[a]	_[a]	0.83	0.84
	Father	B	_[a]	_[a]	0.83	0.83
	Mother	K	0.82	0.85	0.86	0.86
	Father	K	0.80	0.84	0.82	0.84
Separation anxiety	Mother	B	0.91	_[a]	_[a]	_[a]
Inductive reasoning	Mother	B	_[a]	_[b]	0.94	0.95
	Father	B	_[a]	_[b]	0.95	0.95
	Mother	K	_[b]	_[b]	0.94	0.95
	Father	K	_[b]	_[b]	0.96	0.93
Parenting efficacy	Mother	B	_[a]	0.86	0.86	0.88
	Father	B	_[a]	0.84	0.86	0.88
	Mother	K	_[a]	0.89	0.87	0.88
	Father	K	_[a]	0.88	0.87	0.89

a Not measured
b Fewer than four items
c These models are not recommended

In the following sections we describe the model fitting procedures undertaken for each parenting construct, present the rationale for any modifications made and summarise the quality of the final recommended models. The full models are presented in Appendix B: Final recommended structural equation models (final recommended models for all measures) and Appendix C: Initial model fits for models that failed to achieve fit criteria and/or were refitted (initial models for those that were subsequently modified).

Parental warmth

Parental warmth was measured using 6 items:

- How often do you express affection by hugging, kissing and holding this child?
- How often do you hug or hold this child for no particular reason?
- How often do you tell this child how happy he/she makes you?
- How often do you have warm, close times together with this child?
- How often do you enjoy listening to this child and doing things with him/her?
- How often do you feel close to this child both when he/she is happy and upset

This item set was administered across all waves (Waves 1–4), cohorts (B, K) and respondents (mother, father), generating a total of 16 fitted models. Of these, 15 exhibited acceptable to good fit. Measures of scale reliability (H coefficients) were excellent and ranged from 0.92 to 0.96.

The only model that failed to fit was for the fathers in the Wave 1 K cohort (SRMR = 0.09; NNFI = 0.91; CFI = 0.94). Because the overwhelming majority of the models exhibited acceptable to good fit with this single exception, we did not undertake a complete model revision. Instead, we investigated the Wave 1 K-cohort father's warmth model to determine the source of its poor fit. Diagnostic assessment indicated high correlated error between item 2 ('How often do you hug or hold this child for no particular reason?') and item 1 ('How often do you express affection by hugging, kissing and holding this child?'"). Lack of model fit in this instance proved to be addressable by deleting item 2. Bivariate analysis indicated almost complete concordance between these 2 items. So for example, if a father indicated that he very often expressed affection by hugging, kissing and holding the study child, at item 2 fathers inevitably very often hugged or held the child for no particular reason.

We undertook model modification of the initial model for the Wave 1 K-cohort father's parenting warmth by deleting item 2 ('How often do you hug or hold this child for no particular reason?'). This resulted in a well-fitting model (SRMR = 0.03; NNFI = 0.97; CFI = 0.99; H= 0.86). As the rest of the models for parental warmth exhibited acceptable to good fits across waves, respondents and cohorts without this modification, and as this was the single exception, we recommend that the entire set of 6 items for parental warmth be retained and modelled to provide measurement consistency across waves, cohorts and parents.

Parental hostility

A total of 8 models were fitted across Waves 1, 2 and 3. It should be noted that item content varies across waves. In the B cohort at each of Waves 1 and 2, 5 items were used:

- I have been angry with this child.
- I have raised my voice with or shouted at this child.
- When this child cries, he/she gets on my nerves.
- I have lost my temper with this child.
- I have left this child alone in his/her bedroom when he/she was particularly upset.

For the Wave 2 K cohort and for both the B and the K cohort at Wave 3 onward the final item (i.e. 'I have left this child alone in his/her bedroom when he/she was particularly upset') was not developmentally appropriate and as a result not administered, thus these models have 4 variables. All models across waves, respondents and cohorts exhibited acceptable to good fits. Measures of scale reliability (H coefficients) were good and ranged from 0.85 to 0.92.

As with parenting warmth, because all models exhibited acceptable to good fits, we undertook no model modifications. We would note, however, that, where there is a need for complete measurement equivalence across parents, cohorts and waves, the fifth item could be deleted and models re-estimated for fit.

Parenting anger

There were 12 models across the study design that measured parenting anger. The item size and content varied by wave. **LSAC data users are cautioned to select their items for these variables carefully**. The LSAC data dictionary has incorrectly listed the following item as an indicator of parental anger: 'How often do you think that the level of punishment you give this child depends on your mood?' This item was originally included in LSAC as an indicator of parenting (in)consistency, reflecting the extent to which the parent is consistent across contexts in responding to child misbehaviour. We have fitted this item as it was intended, as part of the consistency construct.[6]

The initial item set for parenting anger was introduced at Wave 1 in the K cohort only and comprised the following items:

- Of all the times that you talk to this child about his/her behaviour, how often is this disapproval?
- How often are you angry when you punish this child?
- How often do you feel you are having problems managing this child in general?
- Of all the times you talk to this child about his or her behaviour, how often is this praise? (reverse coded)

The fourth item ('Of all the times you talk to this child about his or her behaviour, how often is this praise?') was reverse coded in line with the intent of the measurement of parental anger.

At Wave 2 the initial item set was retained and expanded by an additional item and administered to the Wave 2 K cohort and thereafter to the B and K cohorts in Waves 3 and 4:

- Of all the times that you talk to this child about his/her behaviour, how often is this disapproval?
- How often are you angry when you punish this child?
- How often do you feel you are having problems managing this child in general?
- Of all the times you talk to this child about his or her behaviour, how often is this praise? (reverse coded)
- How often do you tell this child that he/she is not as good as others?

For these models the initial fits were variable across respondents, cohorts and waves; half showed acceptable or good fit, and half were not acceptable. Examination of initial Wave 1 mother and father model fits indicated that the fourth item ('Of all the times you talk to this child about his or her behaviour, how often is this praise?') had high levels of item error variance. This was the item in the set that was also reverse coded.

Onward examination of models beyond Wave 1, where the item set had been expanded to 5 items, permitted resolution of the problem of unacceptable model fit in those waves. Examination of the item loadings revealed persistent difficulties with the fourth item ('Of all the times you talk to this child about his or her behaviour, how often is this praise?') with 66–91% of its variance being item error across Waves 2, 3 and 4. In addition, high proportions of correlated item error were evident with item 2 ('How often are you angry when you punish this child?'). Thus item 4 was deleted and the Wave 2, 3 and 4 models were re-specified resulting in good model fits. The final recommended item pool for K cohort, Waves 2, 3, and 4 was:

- Of all the times that you talk to this child about his/her behaviour, how often is this disapproval?
- How often are you angry when you punish this child?
- How often do you feel you are having problems managing this child in general?
- How often do you tell this child that he/she is not as good as others?

While the above modification resolved measurement of parental anger in Waves 2, 3, and 4, the Wave 1 measure only had 4 items. Modification proved to be difficult for different reasons in the mother and the father measures of parental anger. Preparation of the input matrices for the mothers' data revealed failure to achieve bivariate normality for the items. This affected the items 'Of all the times that you talk

[6] In models not presented here, we explored whether this item could be considered to represent a measure of parenting anger. Across all models, it was a poorly fitting item, with modification indices indicating that removal of the item would improve model fit. Excluding this item from the construct of parenting anger was thus confirmed by the models.

to this child about his/her behaviour, how often is this disapproval?' and 'Of all the times you talk to this child about his or her behaviour, how often is this praise?' The items were also severely skewed, with the extreme categories having less than 1% of the distribution in them.

Setting aside the violation of bivariate normality, initial attempts to fit models revealed item error in excess of 60%. It is notable that the same item ('Of all the times you talk to this child about his or her behaviour, how often is this praise?') was reverse coded to bring it in line with the factor measure. The item data indicate that parents distinguish this item differentially from the other items measuring 'parental anger' and/or have responded inappropriately to the scaling. While it is possible to improve the model fit by allowing for correlated error, the underlying problem in bivariate normality is not addressed and for this reason we do not recommend the use of a 4-item measure of parental anger at Wave 1. For researchers requiring a Wave 1 model for this concept, a final 3-item model that deletes item 4 (i.e. 'Of all the times you talk to this child about his or her behaviour, how often is this praise?') would be preferable.

In general, the measurement of parental anger proved problematic, although the majority of this problem was addressed through the deletion of the poor performing item in the Wave 2, 3, and 4 specifications. This resulted in comparable item pools across these waves, respondents and cohorts and in models that had a good fit and are usable. However, measures of scale reliability (H coefficients) remained poor, ranging from 0.72 (for the non-recommended Wave 1 models) to 0.81.

Parenting consistency

There were 12 models of parental consistency across all waves of the study. At Wave 1 the item pool comprised:

- When you give this child an instruction or make a request to do something, how often do you make sure that he/she does it?
- If you tell this child he/she will get punished if he/she doesn't stop doing something, but he/she keeps doing it, how often will you punish him/her?
- How often does this child get away with things that you feel should have been punished? (reverse coded)
- How often is this child able to get out of punishment when he/she really sets his/her mind to it? (reverse coded)
- When you discipline this child, how often does he/she ignore the punishment? (reverse coded)

At Wave 2 the initial item set was retained and expanded by the addition of one item and administered to the Wave 2 K cohort and thereafter in the B and K cohorts in Waves 3 and 4:

- When you give this child an instruction or make a request to do something, how often do you make sure that he/she does it?
- If you tell this child he/she will get punished if he/she doesn't stop doing something, but he/she keeps doing it, how often will you punish him/her?
- How often does this child get away with things that you feel should have been punished? (reverse coded)
- How often is this child able to get out of punishment when he/she really sets his/her mind to it? (reverse coded)
- When you discipline this child, how often does he/she ignore the punishment? (reverse coded)
- How often do you think that the level of punishment you give this child depends on your mood? (reverse coded)

LSAC data users are cautioned to select their items for these variables carefully as the item added from Wave 2 was incorrectly listed in the LSAC data dictionary as an indicator of parental anger.[7] While the K-cohort father model at Wave 1 had acceptable fit, all other models failed to meet initial fit criteria. Inspection of the item pool indicated that item 1 ('When you give this child an instruction or make a request to do something, how often do you make sure that he/she does it?') had a preponderance of item

[7] Refer to parenting anger section for more detail.

error (around 70%), with a resultant poor item loading relative to the item set. This item was deleted, resulting in modified models exhibiting acceptable to good fit across waves, respondents and cohorts, with the exception of the father Wave 4 B-cohort model. Scale reliabilities (coefficient H) were good and ranged from 0.80 to 0.86.

Maternal separation anxiety

During the Wave 1 design an item set that measures separation anxiety was administered to mothers who were their child's primary carer. This is the only item set gathered which was not also administered to fathers. The item set comprised the following:

- When away from child, I worry about whether or not the babysitter/carer is able to soothe and comfort the child if he/she is lonely or upset. (reverse coded)
- Only a mother just naturally knows how to comfort her distressed child. (reverse coded)
- I worry when someone else cares for child. (reverse coded)
- I am naturally better at keeping child safe than any other person. (reverse coded)
- A child is likely to get upset when he/she is left with a babysitter or carer. (reverse coded)

Items were rated from 'Strongly agree' (1) to 'Strongly disagree' (5) and thus were reverse coded so that higher scores were associated with high levels of separation anxiety. This item set displayed acceptable model fit with good scale reliability (0.91) and item loadings. No modifications were necessary.

Inductive reasoning

At Waves 3 and 4 a 5-item measure of inductive reasoning was introduced. The item set contained the following:

- Talk it over and reason with this child when he/she misbehaved?
- Explain to this child why he/she was being corrected?
- Give this child reasons why rules should be obeyed?
- Explain to this child the consequences of his/her behaviour?
- Emphasise to this child the reasons for rules?

This item set displayed good model fit across all waves, respondents and cohorts, with excellent scale reliabilities (0.93–0.96) and correspondingly high item loadings. No modifications were necessary.

Parenting efficacy

A 4-item measure of parenting efficacy was introduced at Wave 2:

- Does this child behave in a manner different from the way you want him/her to? (reverse coded)
- Do you think that this child's behaviour is more than you can handle? (reverse coded)
- Do you feel that you are good at getting this child to do what you want him/her to do?
- Do you feel that you are in control and on top of things when you are caring for this child?

Initial model fits were inconsistent. Of the 12 models fitted, 5 exhibited unacceptable fits. Examination of item distributions and initial model fits revealed poor performance of the reverse coded items: 'Does this child behave in a manner different from the way you want him/her to?' and 'Do you think that this child's behaviour is more than you can handle?' Both displayed high levels of item error variance (0.75 and 0.57 respectively), and model modification entailed fitting the correlated error between these items. This resulted in acceptable to good model fit across all waves, respondents and cohorts, with good scale reliabilities (coefficient H) in the range 0.84–0.89.

4.2 Reliability over time

To assess the extent to which the LSAC parenting measures assessed the same constructs over time, we examined Pearson's product moment r correlations between each of the parenting constructs using the final recommended models as described above, from wave to wave. These correlations are presented in Appendix D: Correlations across waves. Correlations with an r value equal to or greater than 0.4 are generally considered to indicate a strong positive relationship between two variables. Correlations of 0.30–0.39 are considered to indicate a moderate positive relationship, while correlations below 0.30 indicate a weak relationship between variables. On the whole, correlations between the parenting constructs over time were moderate to strong, indicating high reliability over time. However, there was some variability across the parenting measures.

Correlation patterns over time were similar for parenting warmth (Appendix table 107: Correlations between parental warmth across waves: B cohort and Appendix table 108: Correlations between parental warmth across waves: K cohort), parenting consistency (Appendix table 112: Correlations between parental consistency across waves: B cohort and Appendix table 113: Correlations between parental consistency across waves: K cohort) and parenting efficacy (Appendix table 116: Correlations between parenting efficacy across waves: B cohort and Appendix table 117: Correlations between parenting efficacy across waves: K cohort), where correlations over all waves consistently indicated moderate to strong or very strong relationships between the variables over time both for respondents and across the B and K cohorts. Correlations were highest between adjacent waves, with a pattern of strengthening adjacent-wave correlations at older ages and/or later waves.

Correlations were consistently very strong across all available waves for parenting anger (Appendix table 110: Correlations between parental anger across waves: B cohort and Appendix table 111: Correlations between parental anger across waves: K cohort) and strong for inductive reasoning (Appendix table 114: Correlations between inductive reasoning across waves: B cohort and Appendix table 115: Correlations between inductive reasoning across waves: K cohort), suggesting good reliability over time for these constructs. For parenting hostility (Appendix table 109: Correlations between parental hostility across waves: B cohort), correlations between Waves 1, 2 and 3 ranged from weak to strong; they were higher for adjacent waves, and highest (strong) between Waves 2 and 3.

Examining correlations such as these is only one method by which the stability of the parenting constructs across waves could be assessed. Information about an alternative, and more complex method, is provided in Box 4.1: Measurement invariance testing.

Box 4.1: Measurement invariance testing

Establishing measurement equivalence or measurement invariance (these terms will be used interchangeably) involves testing whether the measurement of a given construct remains stable over time or across groups. For example, a researcher may wish to determine whether a measure of parenting remains stable between mothers and fathers. Alternatively, research may seek to establish longitudinal relationships (across more than one wave of data) for given parenting constructs. In order to model any construct across groups or over time, it is important to first establish that the measurement of each construct operates in the same way for each group or timepoint. Testing for measurement invariance is primarily relevant for analyses that use a confirmatory factor analysis (CFA) or structural equation modelling (SEM) approach, where the measurement of the construct is modelled in terms of how each item loads onto the underlying factor.

There are a number of steps for establishing measurement invariance. The first is to establish *configural equivalence*. This tests whether the factor structure is identical for each group (in the case of multi-group analysis) or over time (if longitudinal analysis). This step simply involves running the CFA model simultaneously for both models or across all timepoints. The second step tests for *metric invariance*, which examines whether factor loadings are the same across groups/over time. The third step tests for *scalar invariance*, and tests for whether the intercepts (for continuous data) or thresholds (for ordinal data such as the LSAC parenting items) are the same across groups/over time. In many analyses, it is not necessary to test beyond these three steps. However, it is possible to add a fourth step, which tests for *invariant uniqueness*, i.e. whether the measurement of item errors (sometimes referred to as residuals) are equivalent across groups/over time. It may also be of interest to test for *structural invariance*, which is not described here.

The process of testing for measurement invariance is usually completed step by step; however, some researchers prefer to run an omnibus test, which runs the most constrained model, checking for configural, metric, scalar and item error invariance simultaneously. Regardless of approach, the established method for demonstrating invariance is to run a Chi-square difference test, comparing unconstrained and constrained models. If the Chi-square difference test is not significant, then it is safe to assume measurement equivalence. If the test is significant, it may be necessary to free some parameters and test for partial invariance instead.

Further reading

- Byrne, B. (2012). *Structural equation modeling with Mplus*. New York: Routledge.
- Muthén, L.K. and Muthén, B.O. (2012) *Mplus user's guide* Los Angeles: Muthén & Muthén.
- Vandenberg, R.J. and Lance, C.E. (2000) 'A review and synthesis of the measurement in invariance literature: suggestions, practices, and recommendations for organizational research'. *Organizational Research Methods* 3(1), 4–70.

5. Discussion and recommendations

This monograph reports on an investigation of the measurement properties of the mother- and father-reported parenting measures used in LSAC across Waves 1 to 4 for the B and K cohorts. Analytically, the parenting data in LSAC are complex: 9 dimensions are assessed, these can be reported by up to 3 parent figures for each child, and they are collected repeatedly over waves using item sets that may vary according to developmental relevance. The included item sets have generally been adapted from existing measures and are mostly shortened forms of the originals.

Despite the complexity of measuring parenting longitudinally, two-thirds of LSAC's very brief parenting measures, if used in an unmodified form, appear to be working well or reasonably well; one-third are less than optimal. With relatively simple modifications, good (58%) or acceptable (36%) fit can be achieved for 65 of the 69 measures examined here. A summary of these modifications is presented in Table 5.1.

Recommendations on the optimal approach for researchers to use with these variables depend on the nature of their intended use (see Appendix A: Frequently asked questions, question 4):

- If the user wants to compare the relative positioning of respondents (i.e. identifying those who are high versus low warmth), a simple additive score is all that is required. Items can be summed and the resulting unweighted distribution can be dichotomised or split into quintiles, quartiles etc. for analyses. However, in these cases, it is recommended that the user excludes one poorly performing item each for mothers' and fathers' parenting anger and parenting consistency (see Table 5.1).

Alternatively, for analytic methods that are informed by the distributional properties of the measures (e.g. multiple regression, SEM), use of the weighted composite measures is recommended. The weighted composites will reduce measurement error and enhance the accuracy of the examined associations between variables. SPSS syntax to derive all recommended composites is provided in Appendix E: SPSS syntax for creating final, recommended composite measures, and one example each in Stata and SAS are also provided in Appendix A: Frequently asked questions: Frequently asked questions, question 6.

Additionally, based on exploratory work not presented here, we recommend that researchers use the parenting measures classified by parent gender (i.e. the mother and father variables) rather than caregiver status (i.e. P1 and P2). Our initial analyses of the P1 and P2 coded parenting variables indicated they were more problematic than the mother and father coded variables. This difference suggests there are possible gender differences in the way parenting dimensions are operationalised.

At least 4 further lines of research are recommended to build on the work reported here. First, the analyses presented here only examined the parenting measures administered to the study child's resident mothers and fathers. Data on a subset of the parenting variables are also collected from the child's non-resident parent in cases when there is a parent figure living elsewhere (PLE). While the majority of these parents are fathers, it is not safe to assume that the models fitted here for resident fathers will generalise to non-resident fathers. A similar process of model testing should be undertaken with the PLE parenting variables.

Second, as noted previously, the models presented here are not differentiated by a number of subgroup characteristics that may be of interest (e.g. child's gender, sibship position, family structure etc). As such, the models here present an overview of construct validity and scale reliability. Researchers interested in factor invariance between subgroups are encouraged to specifically test these assumptions, which may require consideration of other estimators (e.g. particularly robust estimators) where sample sizes decrease from those used here.

Third, while the between-wave correlations presented here suggest that the parenting constructs measured at one timepoint show mostly moderate to strong correspondence with the same construct measured at another time, measurement invariance over time can be more formally tested using confirmatory factor analysis (see Box 4.1: Measurement invariance testing). Finally, as LSAC continues, the methods used here should be applied to the parenting data collected from Wave 5 onwards.

Table 5.1: Summary of the recommended construction of mother- and father-reported parenting measures: Waves 1 to 4, B and K cohorts

Construct	Original no. items	Recommended composite variables				Comment
		No. items	Deleted items	Correlated errors	Coefficient H	
Warmth, W1–4 B & K cohorts	5	5	–	–	0.92-0.96	Father warmth at W1 B cohort could be improved by deletion of item 'hug'. However, it has been retained for longitudinal and cross-parent consistency.
Hostile, W1–4 B & K cohorts	5	5	–	–	0.85-0.92	
Anger, W1 K cohort	4	Not recommended			0.72	If required, could delete item 'praise' and use a 3-item measure as preferable to the original.
Anger, W2–4 K and W3–4 B cohort	5	4	'praise'	–	0.75-0.81	Item 'mood' misspecified in the LSAC data dictionary. This should be excluded from anger.
Consistency, W1 K cohort	5	4	'make sure'	–	0.80-0.82	
Consistency, W2–4 K and W3–4 B cohort	6	5	'make sure'	–	0.82-0.86	Item 'mood' misspecified in the LSAC data dictionary. This should be included in consistency.
Maternal separation anxiety, W1 B cohort	5	5	–	–	0.91	
Inductive reasoning, W3–4 B & K cohorts	5	5	–	–	0.93-0.96	
Parenting efficacy, W3–4 B & K cohorts	4	4	–	'behave' to 'handle'	0.84-0.89	Wave 4, B cohort, mother: The item loading for 'behave' is very low. This item makes a negligible contribution to the factor.

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Appendixes

Appendix A: Frequently asked questions

What do the numbers in the detailed tables (in Appendix B and C) actually mean?

Table A1: Structural equation model, example

W1/B-Cohort/Mother *Parenting warmth*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
apa03m1. How often do you express **affection** by hugging, kissing and holding this child?	0.854	0.264 *0.232*	N = 5066 df = 9 χ^2 = 241.3 **SRMR = 0.07** NNFI = 0.94 **CFI = 0.97** H = 0.92 Acceptable
apa03m2. How often do you **hug** or hold this child for no particular reason?	0.815	0.204 *0.179*	
apa03m3. How often do you tell this child how **happy** he/she makes you?	0.707	0.119 *0.104*	
apa03m4. How often do you have **warm**, close times together with this child?	0.848	0.253 *0.222*	
apa03m5. How often do you **enjoy** listening to this child and doing things with him/her?	0.782	0.169 *0.148*	
apa03m6. How often do you feel **close** to this child both when he/she is happy and when he/she is upset?	0.728	0.130 *0.114*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

The detailed tables in Appendix B and C follow the same format as the one above. There are two principal columns of numbers in each table. These numbers are the estimates produced from confirmatory factor analysis. The first column contains item 'loadings' for each of the individual items in the model. In the language of structural equation modelling these item loadings are also called 'lambdas' (λx). An item loading (sometimes called a 'factor loading') is a correlation coefficient. It represents the correlation between the measured, observed item and its underlying, unobserved factor. In these models, the measured, observed item loading is best understood as an expression of the underlying factor. If the item were a perfect expression of the underlying factor, the item loading would be 1.0. Another way of thinking of the item loading is to square it. The square of the item loading represents the proportion of variance in the individual item that is explained by the underlying factor. In the above example, item apa03m1 has a loading of 0.854. In other words, about 73% (0.854^2) of item apa03m1 is explained by the underlying factor of parenting warmth. The other 27% of the item variance for apa03m1 is apportioned to the error term.

The second column contains item score regression weights. Like the item loadings, the regression weights show that not all items measure the underlying factor with the same degree of precision. Looking at both the upper and lower regression weights in Appendix table 1: Structural equation model, example, item apa03m3 ('How often do you tell this child how happy he/she makes you?') has the lowest association with the underlying factor of parenting warmth (0.119 and 0.104), while item apa03m1 ('How often do you express affection by hugging, kissing and holding this child?') has the strongest association with underlying factor (0.264 and 0.232).

The upper regression weight for each item is the raw factor score regression weight. The lower figure (in italics) represents the raw factor score regression weight after it has been proportionally adjusted

(i.e. rescaled). This rescaling is linear. It does not change the fundamental relationship between each item and the underlying factor, but, rather, assists interpretation of the new composite. This is because, once the proportionally adjusted factor score regression weights are applied to each item and the items are summed, the final composite is rescaled to the same scale as the original item. So, in this example the items are on a 5-point Likert scale (from 1 to 5). High numbers represent greater parenting warmth. The resultant proportionally adjusted composite variable of 'parental warmth' will also range from 1 to 5 points. Higher scores on the composite will represent greater warmth. The resulting composite has been adjusted to reflect the differential relationship that each item has with the underlying factor.

To account for the fact that some items are more strongly associated with the underlying factor than others, each item loading is multiplied by its respective proportionately adjusted regression weight and then the weighted item scores are summed to form a composite score to represent the underlying factor.

The final column contains the estimates of the model fit. These are explained in the main body of the monograph.

I can't see the item errors in the detailed tables. How do I calculate them?

Square the item loadings (λx) and subtract the result from 1. For example, the item error for apa03m1 in the table above (Wave 1, B cohort, mothers' warmth) is 1—(0.854 * 0.854) = 0.27.

How can I use the tables to reproduce the measurement path diagram?

All of the information needed to reproduce the path diagram is available in the table.

Table A2: Structural equation model for reproducing path diagram, example

W4/K-Cohort/Father *Parenting efficacy*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
fpa12f1r. Does this child **behave** in a manner different from the way you want him/her to? (reverse coded)	0.540	0.028 *0.027*	N = 2724 df = 1 χ^2 = 22.3 $\theta_{\delta(1r,2r)}$ = 0.31 **SRMR = 0.02** **NNFI = 0.96** **CFI = 0.99** H = 0.89 Good
fpa12f2r. Do you think that this child's behaviour is more than you can **handle**? (reverse coded)	0.691	0.134 *0.128*	
fpa12f3. Do you feel that you are good at getting this child to **do** what you want him/her to do?	0.839	0.324 *0.310*	
fpa12f4. Do you feel that you are in control and **on top** of things when you are caring for this child?	0.903	0.560 *0.535*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Bold text in each item indicates the item label used for modelling. For example, here's the path diagram for the Wave 4 K-cohort father's parenting efficacy.

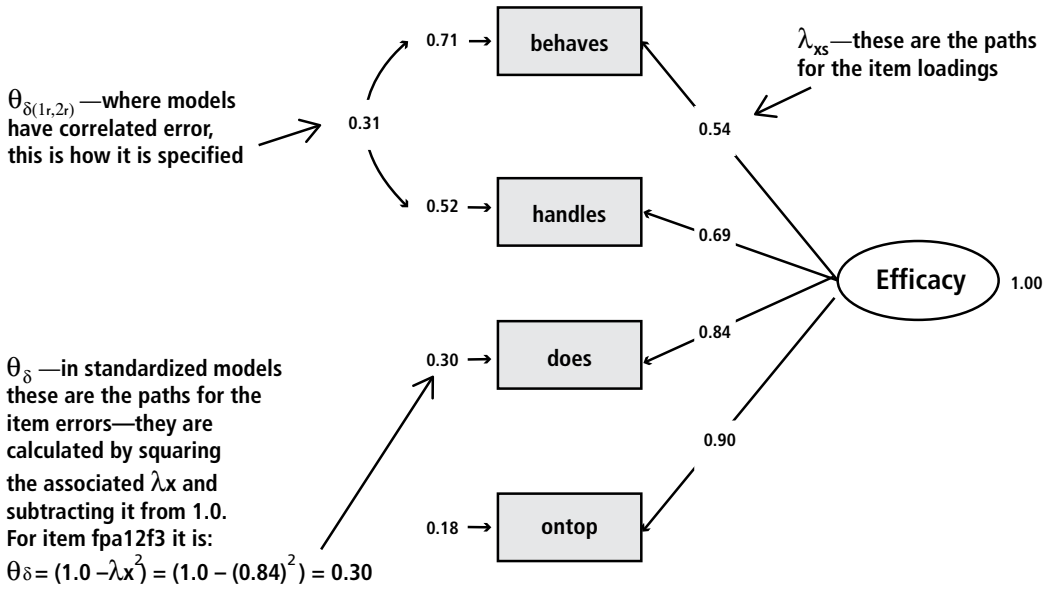

Figure A1: Path diagram, Wave 4 K-cohort father's parenting efficacy

Is it necessary to use a weighted composite or can I just add the items together to create my own composite without using the weights?

It depends. If all you want to do is rank order respondents from low to high parenting warmth, then it is not necessary to employ weights. A simple unweighted sum of items is all that is needed. The resultant unweighted distribution can be partitioned, for example, into quartiles or quintiles for a variety of categorical purposes.

However, there are a number of contexts in which the weighted composite may be more appropriate than an unweighted composite, such as with any procedure where the distributional features of the composite are critical to the statistical method, for example multiple regression or structural equation modelling. Rather than just ranking respondents, these types of procedures take into account the variance structure of the data. Use of the weighted composite is therefore likely to provide a more sensitive estimation of the underlying construct. The distributional features of the composite include a more continuous scaling, more precise estimates of skewness and kurtosis, and benchmarking of the range of the composite to the original ordinal scale used for the items. The composite is adjusted for the differential contribution that the underlying factor makes to each item, and, if proportionally adjusted factor score regression weights have been used to calculate the composite, the model estimates in subsequent statistical procedures may be more interpretable because they refer back to the original item scale.

I am using one of the composite measures. How do I write the methods section of my report?

The detailed table contains enough information to flexibly describe the method to a variety of readerships.

Example 1: a full description

Parental warmth was measured on a 5-point Likert scale using 6 items:

- How often do you express affection by hugging, kissing and holding this child?
- How often do you hug or hold this child for no particular reason?
- How often do you tell this child how happy he/she makes you?
- How often do you have warm, close times together with this child?
- How often do you enjoy listening to this child and doing things with him/her?
- How often do you feel close to this child both when he/she is happy and when he/she is upset?

A composite measure of parenting warmth was calculated using the proportionally adjusted factor score regression weights reported in Zubrick et al. (2013). These were calculated using the following method (also outlined in detail in the report). All item distributions were inspected for missing data and outliers prior to model specification. The model was fitted on complete (non-missing) data. A congeneric model was specified, and polychoric correlations along with their respective asymptotic covariance matrix were input to LISREL 8.8 and estimated using the asymptotically distribution free estimator via weighted least squares (ADF-WLS).

The final choice of model fit indices took into account the following properties of the data: (1) a relatively simple one-factor congeneric model with uncorrelated error; (2) a large sample (N > 4000); (3) item distributions that violate assumptions of normality by a high degree; and (4) a decision to use ADF-WLS as the estimator. In line with Hu and Bentler (1995; 1998; 1999) the principal model fit index was the Standardized Root Mean Residual (SRMR). This index is most sensitive to model misspecification in simple models (as opposed to misspecification in complex models) and is not sensitive to the model estimation method where sample sizes are large. The SRMR was used in conjunction with one of two other indices: the Non-Normed Fit Index (NNFI or TLI as it is also known) and the Comparative Fit Index. Under large sample ADF-WLS the CFI shares similar characteristics to the NNFI (see Hu and Bentler, 1998; Weston and Gore, 2006). Models were deemed to have an acceptable fit where the SRMR < 0.10 and either the NNFI > 0.90 and/or the CFI > 0.90.

The final model was acceptable (SRMR = 0.07; CFI = 0.97). Item loadings ranged from 0.707 to 0.854 and scale reliability (Hancock & Mueller, 2006) was excellent (0.92). To calculate a composite measure of parenting warmth factor, score regression weights were used and proportionally adjusted in line with the technique described by Rowe (2006).

Example 2: a shorter version

A composite measure of parenting warmth was calculated using the proportionally adjusted factor score regression weights reported in the LSAC Parenting Measures Technical Report (Zubrick et al., 2013). Parental warmth was measured on a 5-point Likert scale using 6 items and is described extensively elsewhere (Zubrick et al., 2008). A congeneric model was specified, and polychoric correlations along with their respective asymptotic covariance matrix were input to LISREL 8.8 and estimated using the asymptotically distribution free estimator via weighted least squares (ADF-WLS). In line with Hu and Bentler (1995; 1998; 1999) the principal model fit index was the Standardized Root Mean Residual (SRMR) and was used in conjunction with one of two other indices: the Non-Normed Fit Index (NNFI or TLI as it is also known) and the Comparative Fit Index (CFI). The model was deemed to have an acceptable fit where the SRMR < 0.10 and either the NNFI > 0.90 and/or the CFI > 0.90. The final model was acceptable (SRMR = 0.07; CFI = 0.97). Item loadings ranged from 0.707 to 0.854 and scale reliability (Hancock & Mueller, 2006) was excellent (0.92).

How do I calculate a weighted composite score?

We provide the SPSS syntax for creating weighted composites for each parenting measure in Appendix E: SPSS syntax for creating final, recommended composite measures. In the example below, we will calculate a proportionally adjusted weighted composite representing Wave 1 maternal parenting warmth. Using the respective proportionally adjusted factor score regression weights for each of the items, the following SPSS syntax is generated:

```
MISSING VALUES apa03m1, apa03m2, apa03m3, apa03m4, apa03m5, apa03m6 (lowest to –2).

COMPUTE W1BMwarm = (apa03m1*0.232) + (apa03m2* 0.179) + (apa03m3* 0.104) + (apa03m4*
        0.222) + (apa03m5* 0.148) + (apa03m6* 0.114).

VARIABLE LABELS W1BMwarm 'W1 B Parenting warmth mothers – error adjusted'.
```

The resulting composite has the distributional characteristics of Appendix figure 2: Distributional characteristics of composite, below:

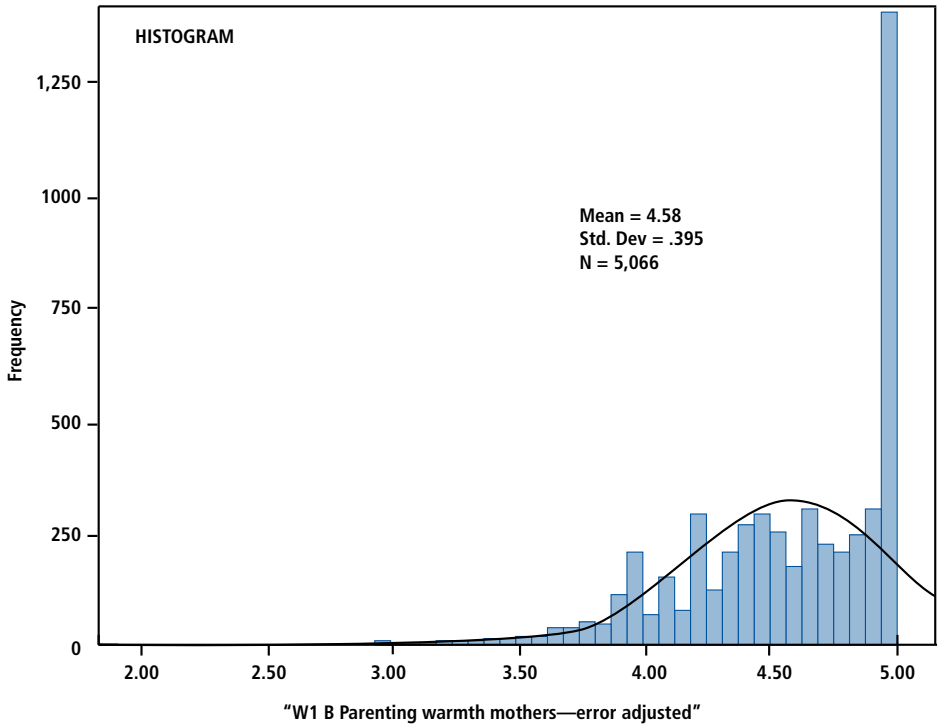

Figure A2: Distributional characteristics of composite measure (error adjusted) of Wave 1, B-cohort, mother's parenting warmth

Note that the composite distribution ranges from a low score of 2.19 (i.e. the distribution has a possible low score of 1.00, but no parent scored this low) and a high score of 5.0 (i.e. the most common score observed). Full distributional characteristics appear in the next table.

Table A3: Statistics for full distributional characteristics of composite measure (error adjusted) of Wave 1, B-cohort, mother's parenting warmth

N	**Valid**	**5066**
	Missing	**41**
Mean		4.5789
Std Deviation		0.39507
Skewness		0.875
Std Error of Skewness		0.034
Kurtosis		0.542
Std Error of Kurtosis		0.069
Range		2.81
Minimum		2.19
Maximum		5.00

The equivalent syntax for Stata is:

```
recode apa03m1 apa03m2 apa03m3 apa03m4 apa03m5 apa03m6 (–9/–1=).

generate W1BMwarm = (apa03m1*0.232) + (apa03m2*0.179) + (apa03m3*0.104) + (apa03m4*0.222)
+ (apa03m5* 0.148) + (apa03m6* 0.114)

label variable W1BMwarm 'W1 B Parenting warmth mothers—error adjusted'
```

The equivalent syntax for SAS is:

```
if apa03m1 <= –2 then apa03m1 = .;

if apa03m2 <= –2 then apa03m2 = .;

if apa03m3 <= –2 then apa03m3 = .;

if apa03m4 <= –2 then apa03m4 = .;

if apa03m5 <= –2 then apa03m5 = .;

if apa03m6 <= –2 then apa03m6 = .;

W1BMwarm = (apa03m1*0.232) + (apa03m2* 0.179) + (apa03m3* 0.104) + (apa03m4* 0.222) +
(apa03m5* 0.148) + (apa03m6* 0.114);

Label W1BMwarm = 'W1 B Parenting warmth mothers—error adjusted'
```

Appendix B: Final recommended structural equation models

Table A4: Final recommended structural equation model for W1/B-cohort/mother, parenting warmth

W1/B-Cohort/Mother *Parenting warmth*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
apa03m1. How often do you express **affection** by hugging, kissing and holding this child?	0.854	0.264 *0.232*	N = 5066 df = 9 χ^2 = 241.3 **SRMR = 0.07** NNFI = 0.94 **CFI = 0.97** H = 0.92 Acceptable
apa03m2. How often do you **hug** or hold this child for no particular reason?	0.815	0.204 *0.179*	
apa03m3. How often do you tell this child how **happy** he/she makes you?	0.707	0.119 *0.104*	
apa03m4. How often do you have **warm**, close times together with this child?	0.848	0.253 *0.222*	
apa03m5. How often do you **enjoy** listening to this child and doing things with him/her?	0.782	0.169 *0.148*	
apa03m6. How often do you feel **close** to this child both when he/she is happy and when he/she is upset?	0.728	0.130 *0.114*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A5: Final recommended structural equation model for W1/B-cohort/father, parenting warmth

W1/B-Cohort/Father *Parenting warmth*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
apa03f1. How often do you express **affection** by hugging, kissing and holding this child?	0.869	0.264 0.235	N = 3598 df = 9 χ^2 = 251.9 **SRMR = 0.074** NNFI = 0.94 **CFI = 0.96** H = 0.93 Acceptable
apa03f2. How often do you **hug** or hold this child for no particular reason?	0.866	0.257 *0.229*	
apa03f3. How often do you tell this child how **happy** he/she makes you?	0.711	0.106 *0.094*	
apa03f4. How often do you have **warm**, close times together with this child?	0.840	0.211 *0.188*	
apa03f5. How often do you **enjoy** listening to this child and doing things with him/her?	0.789	0.155 *0.138*	
apa03f6. How often do you feel **close** to this child both when he/she is happy and when he/she is upset?	0.755	0.130 *0.116*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A6: Final recommended structural equation model for W1/K-cohort/mother, parenting warmth

W1/K-Cohort/Mother *Parenting warmth*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
cpa03m1. How often do you express **affection** by hugging, kissing and holding this child?	0.894	0.308 *0.276*	N = 4894 df = 9 χ^2 = 330.0 **SRMR = 0.09** NNFI = 0.92 **CFI = 0.96** H = 0.93 Acceptable
cpa03m2. How often do you **hug** or hold this child for no particular reason?	0.858	0.224 *0.200*	
cpa03m3. How often do you tell this child how **happy** he/she makes you?	0.755	0.121 *0.108*	
cpa03m4. How often do you have **warm**, close times together with this child?	0.830	0.184 *0.165*	
cpa03m5. How often do you **enjoy** listening to this child and doing things with him/her?	0.779	0.137 *0.123*	
cpa03m6. How often do you feel **close** to this child both when he/she is happy and when he/she is upset?	0.788	0.143 *0.128*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A7: Final recommended structural equation model for W1/K-cohort/father, parenting warmth

W1/K-Cohort/Father *Parenting warmth*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
cpa03f1. How often do you express **affection** by hugging, kissing and holding this child?	0.849	0.240 *0.212*	N = 3351 df = 9 χ^2 = 303.3 **SRMR = 0.09** NNFI = 0.91 CFI = 0.94 H = 0.92 Not acceptable
cpa03f2. How often do you **hug** or hold this child for no particular reason?	0.827	0.206 *0.182*	
cpa03f3. How often do you tell this child how **happy** he/she makes you?	0.738	0.128 *0.113*	
cpa03f4. How often do you have **warm**, close times together with this child?	0.849	0.240 *0.212*	
cpa03f5. How often do you **enjoy** listening to this child and doing things with him/her?	0.776	0.154 *0.136*	
cpa03f6. How often do you feel **close** to this child both when he/she is happy and when he/she is upset?	0.788	0.164 *0.145*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A8: Final recommended structural equation model for W2/B-cohort/mother, parenting warmth

W2/B-Cohort/Mother *Parenting warmth*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
bpa03m1. How often do you express **affection** by hugging, kissing and holding this child?	0.913	0.297 *0.272*	N = 4433 df = 9 χ^2 = 152.9 **SRMR = 0.04** **NNFI = 0.96** **CFI = 0.98** H = 0.95 Good
bpa03m2. How often do you **hug** or hold this child for no particular reason?	0.745	0.091 *0.083*	
bpa03m3. How often do you tell this child how **happy** he/she makes you?	0.740	0.089 *0.081*	
bpa03m4. How often do you have **warm**, close times together with this child?	0.898	0.252 *0.231*	
bpa03m5. How often do you **enjoy** listening to this child and doing things with him/her?	0.885	0.221 *0.202*	
bpa03m6. How often do you feel **close** to this child both when he/she is happy and when he/she is upset?	0.828	0.143 *0.131*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A9: Final recommended structural equation model for W2/B-cohort/father, parenting warmth

W2/B-Cohort/Father *Parenting warmth*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
bpa03f1. How often do you express **affection** by hugging, kissing and holding this child?	0.925	0.329 *0.302*	N = 3132 df = 9 χ^2 = 199.2 **SRMR = 0.06** **NNFI = 0.96** **CFI = 0.98** H = 0.95 Good
bpa03f2. How often do you **hug** or hold this child for no particular reason?	0.813	0.122 *0.112*	
bpa03f3. How often do you tell this child how **happy** he/she makes you?	0.705	0.072 *0.066*	
bpa03f4. How often do you have **warm**, close times together with this child?	0.897	0.234 *0.215*	
bpa03f5. How often do you **enjoy** listening to this child and doing things with him/her?	0.845	0.152 *0.140*	
bpa03f6. How often do you feel **close** to this child both when he/she is happy and when he/she is upset?	0.868	0.180 *0.165*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A10: Final recommended structural equation model for W2/K-cohort/mother, parenting warmth

W2/K-Cohort/Mother *Parenting warmth*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
dpa03m1. How often do you express **affection** by hugging, kissing and holding this child?	0.934	0.370 *0.340*	N = 4215 df = 9 χ^2 = 236.3 **SRMR = 0.06** **NNFI = 0.96** **CFI = 0.97** H = 0.95 Good
dpa03m2. How often do you **hug** or hold this child for no particular reason?	0.828	0.133 *0.122*	
dpa03m3. How often do you tell this child how **happy** he/she makes you?	0.771	0.096 *0.088*	
dpa03m4. How often do you have **warm**, close times together with this child?	0.891	0.218 *0.200*	
dpa03m5. How often do you **enjoy** listening to this child and doing things with him/her?	0.813	0.121 *0.111*	
dpa03m6. How often do you feel **close** to this child both when he/she is happy and when he/she is upset?	0.845	0.150 *0.138*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A11: Final recommended structural equation model for W2/K-cohort/father, parenting warmth

W2/K-Cohort/Father *Parenting warmth*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
dpa03f1. How often do you express **affection** by hugging, kissing and holding this child?	0.924	0.299 *0.276*	N = 2971 df = 338.1 χ^2 = 9 **SRMR = 0.09** NNFI = 0.94 **CFI = 0.96** H = 0.95 Acceptable
dpa03f2. How often do you **hug** or hold this child for no particular reason?	0.862	0.158 *0.146*	
dpa03f3. How often do you tell this child how **happy** he/she makes you?	0.778	0.093 *0.086*	
dpa03f4. How often do you have **warm**, close times together with this child?	0.888	0.197 *0.182*	
dpa03f5. How often do you **enjoy** listening to this child and doing things with him/her?	0.865	0.162 *0.149*	
dpa03f6. How often do you feel **close** to this child both when he/she is happy and when he/she is upset?	0.874	0.175 *0.161*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A12: Final recommended structural equation model for W3/B-child/mother, parenting warmth

W3/B-Child/Mother *Parenting warmth*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
cpa03m1. How often do you express **affection** by hugging, kissing and holding this child?	0.941	0.376 *0.348*	N = 3775 df = 9 χ^2 = 167.7 **SRMR = 0.05** **NNFI = 0.97** **CFI = 0.98** H = 0.95 Good
cpa03m2. How often do you **hug** or hold this child for no particular reason?	0.829	0.120 *0.111*	
cpa03m3. How often do you tell this child how **happy** he/she makes you?	0.806	0.105 *0.097*	
cpa03m4. How often do you have **warm**, close times together with this child?	0.914	0.252 *0.233*	
cpa03m5. How often do you **enjoy** listening to this child and doing things with him/her?	0.822	0.115 *0.106*	
cpa03m6. How often do you feel **close** to this child both when he/she is happy and when he/she is upset?	0.818	0.112 *0.104*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A13: Final recommended structural equation model for W3/B-child/father, parenting warmth

W3/B-Child/Father *Parenting warmth*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
cpa03f1. How often do you express **affection** by hugging, kissing and holding this child?	0.918	0.296 *0.272*	N = 2750 df = 9 χ^2 = 225.1 **SRMR = 0.07** NNFI = 0.95 **CFI = 0.97** H = 0.95 Acceptable
cpa03f2. How often do you **hug** or hold this child for no particular reason?	0.843	0.147 *0.135*	
cpa03f3. How often do you tell this child how **happy** he/she makes you?	0.750	0.086 *0.079*	
cpa03f4. How often do you have **warm**, close times together with this child?	0.905	0.253 *0.232*	
cpa03f5. How often do you **enjoy** listening to this child and doing things with him/her?	0.834	0.138 *0.127*	
cpa03f6. How often do you feel **close** to this child both when he/she is happy and when he/she is upset?	0.861	0.168 *0.154*	

a Partial regression coefficients of the item on the underlying construct.
b. Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c. Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A14: Final recommended structural equation model for W3/K-cohort/mother, parenting warmth

W3/K-Cohort/Mother *Parenting warmth*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
epa03m1. How often do you express **affection** by hugging, kissing and holding this child?	0.910	0.271 *0.249*	N = 3718 df = 9 χ^2 = 229.6 **SRMR = 0.06** **NNFI = 0.96** **CFI = 0.97** H = 0.95 Good
epa03m2. How often do you **hug** or hold this child for no particular reason?	0.804	0.117 *0.107*	
epa03m3. How often do you tell this child how **happy** he/she makes you?	0.804	0.116 *0.106*	
epa03m4. How often do you have **warm**, close times together with this child?	0.895	0.230 *0.211*	
epa03m5. How often do you **enjoy** listening to this child and doing things with him/her?	0.867	0.179 *0.164*	
epa03m6. How often do you feel **close** to this child both when he/she is happy and when he/she is upset?	0.866	0.177 *0.162*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A15: Final recommended structural equation model for W3/K-cohort/father, parenting warmth

W3/K-Cohort/Father *Parenting warmth*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
epa03f1. How often do you express **affection** by hugging, kissing and holding this child?	0.926	0.355 *0.324*	N = 2731 df = 9 χ^2 = 251.7 **SRMR = 0.08** NNFI = 0.94 **CFI = 0.96** H = 0.94 Acceptable
epa03f2. How often do you **hug** or hold this child for no particular reason?	0.843	0.159 *0.145*	
epa03f3. How often do you tell this child how **happy** he/she makes you?	0.802	0.122 *0.111*	
epa03f4. How often do you have **warm**, close times together with this child?	0.877	0.207 *0.189*	
epa03f5. How often do you **enjoy** listening to this child and doing things with him/her?	0.806	0.126 *0.115*	
epa03f6. How often do you feel **close** to this child both when he/she is happy and when he/she is upset?	0.807	0.126 *0.115*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A16: Final recommended structural equation model for W4/B-cohort/mother, parenting warmth

W4/B-Cohort/Mother *Parenting warmth*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
dpa03m1. How often do you express **affection** by hugging, kissing and holding this child?	0.945	0.322 *0.302*	N = 4105 df = 9 χ^2 = 201.2 **SRMR = 0.06** **NNFI = 0.97** **CFI = 0.98** H = 0.96 Good
dpa03m2. How often do you **hug** or hold this child for no particular reason?	0.879	0.141 *0.132*	
dpa03m3. How often do you tell this child how **happy** he/she makes you?	0.824	0.094 *0.088*	
dpa03m4. How often do you have **warm**, close times together with this child?	0.912	0.199 *0.187*	
dpa03m5. How often do you **enjoy** listening to this child and doing things with him/her?	0.897	0.168 *0.158*	
dpa03m6. How often do you feel **close** to this child both when he/she is happy and when he/she is upset?	0.879	0.142 *0.133*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A17: Final recommended structural equation model for W4/B-cohort/father, parenting warmth

W4/B-Cohort/Father *Parenting warmth*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
dpa03f1. How often do you express **affection** by hugging, kissing and holding this child?	0.933	0.348 *0.321*	N = 2718 df = 9 χ^2 = 306.7 **SRMR = 0.09** NNFI = 0.95 **CFI = 0.97** H = 0.95 Acceptable
dpa03f2. How often do you **hug** or hold this child for no particular reason?	0.870	0.173 *0.159*	
dpa03f3. How often do you tell this child how **happy** he/she makes you?	0.752	0.084 *0.077*	
dpa03f4. How often do you have **warm**, close times together with this child?	0.890	0.207 *0.191*	
dpa03f5. How often do you **enjoy** listening to this child and doing things with him/her?	0.832	0.131 *0.121*	
dpa03f6. How often do you feel **close** to this child both when he/she is happy and when he/she is upset?	0.844	0.142 *0.131*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A18: Final recommended structural equation model for W4/K-cohort/mother, parenting warmth

W4/K-Cohort/Mother *Parenting warmth*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
fpa03m1. How often do you express **affection** by hugging, kissing and holding this child?	0.886	0.210 *0.193*	N = 4024 df = 9 χ^2 = 267.0 **SRMR = 0.07** **NNFI = 0.96** **CFI = 0.98** H = 0.95 Good
fpa03m2. How often do you **hug** or hold this child for no particular reason?	0.849	0.155 *0.142*	
fpa03m3. How often do you tell this child how **happy** he/she makes you?	0.813	0.123 *0.113*	
fpa03m4. How often do you have **warm**, close times together with this child?	0.902	0.247 *0.227*	
fpa03m5. How often do you **enjoy** listening to this child and doing things with him/her?	0.875	0.191 *0.175*	
fpa03m6. How often do you feel **close** to this child both when he/she is happy and when he/she is upset?	0.856	0.164 *0.150*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A19: Final recommended structural equation model for W4/K-cohort/father, parenting warmth

W4/K-Cohort/Father *Parenting warmth*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
fpa03f1. How often do you express **affection** by hugging, kissing and holding this child?	0.929	0.352 *0.323*	N = 2723 df = 9 χ^2 = 313.5 **SRMR = 0.09** NNFI = 0.94 **CFI = 0.96** H = 0.95 Acceptable
fpa03f2. How often do you **hug** or hold this child for no particular reason?	0.861	0.173 *0.159*	
fpa03f3. How often do you tell this child how **happy** he/she makes you?	0.779	0.103 *0.094*	
fpa03f4. How often do you have **warm**, close times together with this child?	0.866	0.179 *0.164*	
fpa03f5. How often do you **enjoy** listening to this child and doing things with him/her?	0.835	0.143 *0.131*	
fpa03f6. How often do you feel **close** to this child both when he/she is happy and when he/she is upset?	0.832	0.141 *0.129*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A20: Final recommended structural equation model for W1/B-cohort/mother, parenting hostility

W1/B-Cohort/Mother *Parenting hostility*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
apa04m1. I have been **angry** with this child.	0.822	0.272 *0.242*	N = 5058 df = 5 χ^2 = 148.2 **SRMR = 0.04** NNFI = 0.94 **CFI = 0.97** H = 0.89 Acceptable
apa04m2. I have raised my voice with or **shouted** at this child.	0.792	0.228 *0.203*	
apa04m3. When this child cries, he/she gets on my **nerves**.	0.730	0.167 *0.149*	
apa04m4. I have lost my **temper** with this child.	0.865	0.367 *0.327*	
apa04m5. I have **left** this child alone in his/her bedroom when he/she was particularly upset.	0.560	0.088 *0.078*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A21: Final recommended structural equation model for W1/B-cohort/father, parenting hostility

W1/B-Cohort/Father *Parenting hostility*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
apa04f1. I have been **angry** with this child.	0.877	0.36 *0.325*	N = 3622 df = 5 χ^2 = 173.1 **SRMR = 0.05** NNFI = 0.93 **CFI = 0.97** H = 0.90 Acceptable
apa04f2. I have raised my voice with or **shouted** at this child.	0.798	0.208 *0.188*	
apa04f3. When this child cries, he/she gets on my **nerves**.	0.708	0.135 *0.122*	
apa04f4. I have lost my **temper** with this child.	0.867	0.332 *0.299*	
apa04f5. I have **left** this child alone in his/her bedroom when he/she was particularly upset.	0.545	0.074 *0.067*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A22: Final recommended structural equation model for W2/B-cohort/mother, parenting hostility

W2/B-Cohort/Mother *Parenting hostility*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
bpa04m1. I have been **angry** with this child.	0.741	0.242 *0.209*	N = 3475 df = 5 χ^2 = 13.5 **SRMR = 0.02** **NNFI = 0.99** **CFI = 0.99** H = 0.85 Good
bpa04m2. I have raised my voice with or **shouted** at this child.	0.716	0.217 *0.187*	
bpa04m3. When this child cries, he/she gets on my **nerves**.	0.749	0.250 *0.216*	
bpa04m4. I have lost my **temper** with this child.	0.801	0.329 *0.284*	
bpa04m5. I have **left** this child alone in his/her bedroom when he/she was particularly upset.	0.559	0.120 *0.104*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A23: Final recommended structural equation model for W2/B-cohort/father, parenting hostility

W2/B-Cohort/Father *Parenting hostility*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
bpa04f1. I have been **angry** with this child.	0.870	0.259 *0.239*	N = 3109 df = 5 χ^2 = 88.5 **SRMR = 0.09** **NNFI = 0.98** **CFI = 0.99** H = 0.92 Good
bpa04f2. I have raised my voice with or **shouted** at this child.	0.884	0.292 *0.269*	
bpa04f3. When this child cries, he/she gets on my **nerves**.	0.677	0.091 *0.084*	
bpa04f4. I have lost my **temper** with this child.	0.912	0.392 *0.362*	
bpa04f5. I have **left** this child alone in his/her bedroom when he/she was particularly upset.	0.511	0.05 *0.046*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A24: Final recommended structural equation model for W2/K-cohort/mother, parenting hostility

W2/K-Cohort/Mother *Parenting hostility*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
dpa04m1. I have been **angry** with this child.	0.882	0.372 *0.347*	N = 3418 df = 2 χ^2 = 77.3 **SRMR = 0.03** **NNFI = 0.97** **CFI = 0.99** H = 0.90 Good
dpa04m2. I have raised my voice with or **shouted** at this child.	0.877	0.358 *0.334*	
dpa04m3. When this child cries, he/she gets on my **nerves**.	0.627	0.097 *0.090*	
dpa04m4. I have lost my **temper** with this child.	0.827	0.245 *0.228*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A25: Final recommended structural equation model for W2/K-cohort/father, parenting hostility

W2/K-Cohort/Father *Parenting hostility*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
dpa04f1. I have been **angry** with this child.	0.881	0.364 *0.340*	N = 2951 df = 2 χ^2 = 113.1 **SRMR = 0.04** NNFI = 0.95 **CFI = 0.98** H = 0.91 Acceptable
dpa04f2. I have raised my voice with or **shouted** at this child.	0.868	0.327 *0.305*	
dpa04f3. When this child cries, he/she gets on my **nerves**.	0.657	0.107 *0.100*	
dpa04f4. I have lost my **temper** with this child.	0.845	0.274 *0.256*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A26: Final recommended structural equation model for W3/B-cohort/mother, parenting hostility

W3/B-Cohort/Mother *Parenting hostility*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
cpa04m1. I have been **angry** with this child.	0.746	0.249 *0.225*	N = 3794 df = 2 χ^2 = 61.1 **SRMR = 0.04** NNFI = 0.95 **CFI = 0.98** H = 0.85 Acceptable
cpa04m2. I have raised my voice with or **shout**ed at this child.	0.760	0.266 *0.241*	
cpa04m3. When this child cries, he/she gets on my **nerves**.	0.639	0.160 *0.145*	
cpa04m4. I have lost my **temper** with this child.	0.842	0.429 *0.389*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A27: Final recommended structural equation model for W3/B-cohort/father, parenting hostility

W3/B-Cohort/Father *Parenting hostility*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
cpa04f1. I have been **angry** with this child.	0.743	0.250 *0.227*	N = 2951 df = 2 χ^2 = 12.0 **SRMR = 0.05** **NNFI = 0.99** **CFI = 0.99** H = 0.85 Good
cpa04f2. I have raised my voice with or **shout**ed at this child.	0.644	0.165 *0.150*	
cpa04f3. When this child cries, he/she gets on my **nerves**.	0.633	0.159 *0.144*	
cpa04f4. I have lost my **temper** with this child.	0.867	0.527 *0.479*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A28: Final recommended structural equation model for W1/K-cohort/mother, parenting anger

W1/K-Cohort/Mother *Parenting anger*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
cpa13m3. Of all the times that you talk to this child about his/her behaviour, how often is this **disapproval**?	0.672	0.343 *0.303*	N = 4958 df = 2 χ^2 = 27.2 **SRMR = 0.02** NNFI = 0.95 **CFI = 0.98** H = 0.72 Not recommended[e]
cpa13m4. How often are you **angry** when you punish this child?	0.569	0.236 *0.208*	
cpa13m5. How often do you feel you are having **problems** managing this child in general?	0.718	0.414 *0.365*	
cpa13m2. Of all the times you talk to this child about his or her behaviour, how often is this **praise**?[d] (reverse coded)	0.415	0.140 *0.124*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007). d. Item was reverse coded and labelled nopraise; item has high levels of item error variance e. Item distributions failed tests of bivariate normality.
d Item was reverse coded and labelled *nopraise*; item has high levels of item error variance.
e Item distributions failed tests of bivariate normality.

Table A29: Final recommended structural equation model for W1/K-cohort/father, parenting anger

W1/K-Cohort/Father *Parenting anger*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
cpa13f3. Of all the times that you talk to this child about his/her behaviour, how often is this **disapproval**?	0.730	0.438 *0.384*	N = 3311 df = 2 χ^2 = 66.8 **SRMR = 0.04** NNFI = 0.83 CFI = 0.94 H = 0.72 Not recommended
cpa13f4. How often are you **angry** when you punish this child?	0.498	0.186 *0.163*	
cpa13f5. How often do you feel you are having **problems** managing this child in general?	0.589	0.253 *0.222*	
cpa13f2. Of all the times you talk to this child about his or her behaviour, how often is this **praise**?[d] (reverse coded)	0.601	0.264 *0.231*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).
d Item was reverse coded and labelled *nopraise*; item has high levels of item error variance.

Table A30: Final recommended structural equation model for W2/K-cohort/mother, parenting anger

W2/K-Cohort/Mother *Parenting anger*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
dpa13m3. Of all the times that you talk to this child about his/her behaviour, how often is this **disapproval**?	0.687	0.273 *0.242*	N = 4221 df = 2 χ^2 = 12.2 **SRMR = 0.01** **NNFI = 0.98** **CFI = 0.99** H = 0.79 Good
dpa13m4. How often are you **angry** when you punish this child?	0.566	0.175 *0.155*	
dpa13m5. How often do you feel you are having **problems** managing this child in general?	0.775	0.407 *0.361*	
dpa13m2. Of all the times you talk to this child about his or her behaviour, how often is this **praise**?[d,e] (reverse coded)	–	–	
dpa13m6. How often do you tell this child that he/she is **not as good** as others?	0.687	0.273 *0.242*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).
d Item was reverse coded and labelled *nopraise*.
e Item deleted in model modification.

Table A31: Final recommended structural equation model for W2/K-cohort/father, parenting anger

W2/K-Cohort/Father *Parenting anger*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
pa13m3. Of all the times that you talk to this child about his/her behaviour, how often is this **disapproval**?	0.616	0.234 *0.206*	N = 2814 df = 2 χ^2 = 1.9 **SRMR = 0.01** **NNFI = 0.99** **CFI = 1.00** H = 0.76 Good
cpa13m4. How often are you **angry** when you punish this child?	0.587	0.211 *0.186*	
cpa13m5. How often do you feel you are having **problems** managing this child in general?	0.774	0.456 *0.402*	
cpa13m2. Of all the times you talk to this child about his or her behaviour, how often is this **praise**?[d,e] (reverse coded)	–	–	
cpa13m6. How often do you tell this child that he/she is **not as good** as others?	0.615	0.233 *0.205*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).
d Item was reverse coded and labelled *nopraise*.
e Item deleted in model modification.

Table A32: Final recommended structural equation model for W3/B-cohort/mother, parenting anger

W3/B-Cohort/Mother *Parenting anger*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
cpa13m3. Of all the times that you talk to this child about his/her behaviour, how often is this **disapproval**?	0.604	0.236 *0.208*	N = 3747 df = 2 χ^2 = 3.1 **SRMR = 0.01** **NNFI = 0.89** **CFI = 0.99** H = 0.75 Good
cpa13m4. How often are you **angry** when you punish this child?	0.601	0.234 *0.206*	
cpa13m5. How often do you feel you are having **problems** managing this child in general?	0.767	0.462 *0.407*	
cpa13m2. Of all the times you talk to this child about his or her behaviour, how often is this **praise**?[d,e] (reverse coded)	–	–	
cpa13m6. How often do you tell this child that he/she is **not as good** as others?	0.562	0.204 *0.179*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).
d Item was reverse coded and labelled *nopraise*.
e Item deleted in model modification.

Table A33: Final recommended structural equation model for W3/B-cohort/father, parenting anger

W3/B-Cohort/Father *Parenting anger*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
cpa13f3. Of all the times that you talk to this child about his/her behaviour, how often is this **disapproval**?	0.602	0.222 *0.196*	N = 2719 df = 2 χ^2 = 0.7 **SRMR = 0.01** **NNFI = 1.00** **CFI = 1.00** H = 0.76 Good
cpa13f4. How often are you **angry** when you punish this child?	0.589	0.213 *0.188*	
cpa13f5. How often do you feel you are having **problems** managing this child in general?	0.772	0.452 *0.398*	
cpa13f2. Of all the times you talk to this child about his or her behaviour, how often is this **praise**?[d,e] (reverse coded)	–	–	
cpa13f6. How often do you tell this child that he/she is **not as good** as others?	0.631	0.247 *0.218*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).
d Item was reverse coded and labelled *nopraise*.
e Item deleted in model modification.

Table A34: Final recommended structural equation model for W3/K-cohort/mother, parenting anger

W3/K-Cohort/Mother *Parenting anger*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
epa13m3. Of all the times that you talk to this child about his/her behaviour, how often is this **disapproval**?	0.678	0.289 *0.256*	N = 3691 df = 2 χ^2 = 2.5
epa13m4. How often are you **angry** when you punish this child?	0.570	0.194 *0.172*	
epa13m5. How often do you feel you are having **problems** managing this child in general?	0.782	0.464 *0.411*	**SRMR = 0.01** **NNFI = 0.99** **CFI = 1.00**
epa13m2. Of all the times you talk to this child about his or her behaviour, how often is this **praise**?[d,e] (reverse coded)	–	–	H = 0.77
epa13m6. How often do you tell this child that he/she is **not as good** as others?	0.551	0.182 *0.161*	Good

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).
d Item was reverse coded and labelled *nopraise*.
e Item deleted in model modification.

Table A35: Final recommended structural equation model for W3/K-cohort/father, parenting anger

W3/K-Cohort/Father *Parenting anger*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
epa13f3. Of all the times that you talk to this child about his/her behaviour, how often is this **disapproval**?	0.624	0.235 *0.208*	N = 2687 df = 2 χ^2 = 6.6
epa13f4. How often are you **angry** when you punish this child?	0.574	0.197 *0.174*	
epa13f5. How often do you feel you are having **problems** managing this child in general?	0.790	0.485 *0.429*	**SRMR = 0.01** **NNFI = 0.99** **CFI = 0.99**
epa13f2. Of all the times you talk to this child about his or her behaviour, how often is this **praise**?[d,e] (reverse coded)	–	–	H = 0.77
epa13f6. How often do you tell this child that he/she is **not as good** as others?	0.596	0.213 *0.188*	Good

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).
d Item was reverse coded and labelled *nopraise*.
e Item deleted in model modification.

Table A36: Final recommended structural equation model for W4/B-cohort/mother, parenting anger

W4/B-Cohort/Mother *Parenting anger*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
dpa13m3. Of all the times that you talk to this child about his/her behaviour, how often is this **disapproval**?	0.685	0.281 *0.249*	N = 4145 df = 2 χ^2 = 6.0 **SRMR = 0.01** **NNFI = 0.99** **CFI = 0.99** H = 0.78 Good
dpa13m4. How often are you **angry** when you punish this child?	0.544	0.168 *0.149*	
dpa13m5. How often do you feel you are having **problems** managing this child in general?	0.78	0.441 *0.391*	
dpa13m2. Of all the times you talk to this child about his or her behaviour, how often is this **praise**?[d,e] (reverse coded)	–	–	
dpa13m6. How often do you tell this child that he/she is **not as good** as others?	0.642	0.238 *0.211*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).
d Item was reverse coded and labelled *nopraise*.
e Item deleted in model modification.

Table A37: Final recommended structural equation model for W4/B-cohort/father, parenting anger

W4/B-Cohort/Father *Parenting anger*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
dpa13f3. Of all the times that you talk to this child about his/her behaviour, how often is this **disapproval**?	0.616	0.229 *0.202*	N = 2688 df = 2 χ^2 = 5.9 **SRMR = 0.01** **NNFI = 0.99** **CFI = 0.99** H = 0.77 Good
dpa13f4. How often are you **angry** when you punish this child?	0.595	0.212 *0.187*	
dpa13f5. How often do you feel you are having **problems** managing this child in general?	0.783	0.466 *0.411*	
dpa13f2. Of all the times you talk to this child about his or her behaviour, how often is this **praise**?[d,e] (reverse coded)	–	–	
dpa13f6. How often do you tell this child that he/she is **not as good** as others?	0.613	0.226 *0.199*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).
d Item was reverse coded and labelled *nopraise*.
e Item deleted in model modification.

Table A38: Final recommended structural equation model for W4/K-cohort/mother, parenting anger

W4/K-Cohort/Mother *Parenting anger*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
fpa13m3. Of all the times that you talk to this child about his/her behaviour, how often is this **disapproval**?	0.704	0.267 *0.238*	N = 4020 df = 2 $\chi^2 = 3.3$ **SRMR = 0.01** **NNFI = 0.99** **CFI = 0.99** H = 0.81 Good
fpa13m4. How often are you **angry** when you punish this child?	0.607	0.184 *0.164*	
fpa13m5. How often do you feel you are having **problems** managing this child in general?	0.816	0.468 *0.417*	
fpa13m2. Of all the times you talk to this child about his or her behaviour, how often is this **praise**?[d,e] (reverse coded)	–	–	
fpa13m6. How often do you tell this child that he/she is **not as good** as others?	0.633	0.202 *0.180*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).
d Item was reverse coded and labelled *nopraise*.
e Item deleted in model modification.

Table A39: Final recommended structural equation model for W4/K-cohort/father, parenting anger

W4/K-Cohort/Father *Parenting anger*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
fpa13f3. Of all the times that you talk to this child about his/her behaviour, how often is this **disapproval**?	0.624	0.200 *0.179*	N = 2709 df = 2 $\chi^2 = 5.5$ **SRMR = 0.01** **NNFI = 0.99** **CFI = 0.99** H = 0.80 Good
fpa13f4. How often are you **angry** when you punish this child?	0.576	0.169 *0.151*	
fpa13f5. How often do you feel you are having **problems** managing this child in general?	0.817	0.482 *0.430*	
fpa13f2. Of all the times you talk to this child about his or her behaviour, how often is this **praise**?[d,e] (reverse coded)	–	–	
fpa13f6. How often do you tell this child that he/she is **not as good** as others?	0.700	0.269 *0.240*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).
d Item was reverse coded and labelled *nopraise*.
e Item deleted in model modification.

Table A40: Final recommended structural equation model for W1/K-cohort/mother, parenting consistency

W1/K-Cohort/Mother *Parenting consistency*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
cpa11m1. When you give this child an instruction or make a request to do something, how often do you **make sure** that he/she does it? [d]	–	–	N = 4891 df = 2 χ^2 = 56.4 **SRMR = 0.03** NNFI = 0.95 **CFI = 0.98** H = 0.82 Acceptable
cpa11m2. If you tell this child he/she will get **punish**ed if he/she doesn't stop doing something, but he/she keeps doing it, how often will you punish him/her?	0.492	0.117 *0.105*	
cpa11m3. How often does this child **get away** with things that you feel should have been punished? (reverse coded)	0.792	0.382 *0.345*	
cpa11m4. How often is this child able to **get out** of punishment when he/she really sets his/her mind to it? (reverse coded)	0.798	0.395 *0.355*	
cpa11m5. When you discipline this child, how often does he/she **ignore** the punishment? (reverse coded)	0.668	0.217 *0.195*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).
d Item deleted in model modification.

Table A41: Final recommended structural equation model for W1/K-cohort/father, parenting consistency

W1/K-Cohort/Father *Parenting consistency*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
cpa11f1. When you give this child an instruction or make a request to do something, how often do you **make sure** that he/she does it? [d]	–	–	N = 3325 df = 2 χ^2 = 19.6 **SRMR = 0.02** **NNFI = 0.97** **CFI = 0.99** H = 0.80 Good
cpa11f2. If you tell this child he/she will get **punish**ed if he/she doesn't stop doing something, but he/she keeps doing it, how often will you punish him/her?	0.568	0.166 *0.148*	
cpa11f3. How often does this child **get away** with things that you feel should have been punished? (reverse coded)	0.761	0.358 *0.319*	
cpa11f4. How often is this child able to **get out** of punishment when he/she really sets his/her mind to it? (reverse coded)	0.776	0.387 *0.345*	
cpa11f5. When you discipline this child, how often does he/she **ignore** the punishment? (reverse coded)	0.635	0.211 *0.188*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).
d Item deleted in model modification.

Table A42: Final recommended structural equation model for W2/K-cohort/mother, parenting consistency

W2/K-Cohort/Mother *Parenting consistency*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
dpa11m1. When you give this child an instruction or make a request to do something, how often do you **make sure** that he/she does it?[d]	–	–	
dpa11m2. If you tell this child he/she will get **punished** if he/she doesn't stop doing something, but he/she keeps doing it, how often will you punish him/her?	0.470	0.091 *0.079*	N = 4202 df = 5 χ^2 = 115.2
dpa11m3. How often does this child **get away** with things that you feel should have been punished? (reverse coded)	0.808	0.35 *0.305*	**SRMR = 0.04** NNFI = 0.94 **CFI = 0.97**
dpa11m4. How often is this child able to **get out** of punishment when he/she really sets his/her mind to it? (reverse coded)	0.814	0.365 *0.319*	H = 0.85
dpa11m5. When you discipline this child, how often does he/she **ignore** the punishment? (reverse coded)	0.741	0.248 *0.216*	Acceptable
dpa13m7. How often do you think that the level of punishment you give this child depends on your **mood**? (reverse coded)			

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).
d Item deleted in model modification.

Table A43: Final recommended structural equation model for W2/K-cohort/father, parenting consistency

W2/K-Cohort/Father *Parenting consistency*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
dpa11f1. When you give this child an instruction or make a request to do something, how often do you **make sure** that he/she does it?[d]			
dpa11f2. If you tell this child he/she will get **punished** if he/she doesn't stop doing something, but he/she keeps doing it, how often will you punish him/her?	0.500	0.108 *0.094*	N = 2900 df = 5 χ^2 = 89.9
dpa11f3. How often does this child **get away** with things that you feel should have been punished? (reverse coded)	0.781	0.325 *0.282*	**SRMR = 0.05** NNFI = 0.92 **CFI = 0.96**
dpa11f4. How often is this child able to **get out** of punishment when he/she really sets his/her mind to it? (reverse coded)	0.816	0.397 *0.345*	H = 0.84
dpa11f5. When you discipline this child, how often does he/she **ignore** the punishment? (reverse coded)	0.715	0.239 *0.207*	Acceptable
dpa13f7. How often do you think that the level of punishment you give this child depends on your **mood**? (reverse coded)	0.419	0.083 *0.072*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).
d Item deleted in model modification. d. Item deleted in model modification.

Table A44: Final recommended structural equation model for W3/B-cohort/mother, parenting consistency

W3/B-Cohort/Mother *Parenting consistency*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
cpa11m1. When you give this child an instruction or make a request to do something, how often do you **make sure** that he/she does it?[d]	–	–	
cpa11m2. If you tell this child he/she will get **punished** if he/she doesn't stop doing something, but he/she keeps doing it, how often will you punish him/her?	0.534	0.129 *0.111*	N = 3733 df = 5 χ^2 = 85.5 **SRMR = 0.05** NNFI = 0.92 **CFI = 0.96** H = 0.83 Acceptable
cpa11m3. How often does this child **get away** with things that you feel should have been punished? (reverse coded)	0.784	0.351 *0.302*	
cpa11m4. How often is this child able **to get out** of punishment when he/she really sets his/her mind to it? (reverse coded)	0.781	0.346 *0.298*	
cpa11m5. When you discipline this child, how often does he/she **ignore** the punishment? (reverse coded)	0.710	0.247 *0.213*	
cpa13m7. How often do you think that the level of punishment you give this child depends on your **mood**? (reverse coded)	0.421	0.088 *0.076*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).
d Item deleted in model modification.

Table A45: Final recommended structural equation model for W3/B-cohort/father, parenting consistency

W3/B-Cohort/Father *Parenting consistency*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
cpa11f1. When you give this child an instruction or make a request to do something, how often do you **make sure** that he/she does it?[d]	–	–	
cpa11f2. If you tell this child he/she will get **punish**ed if he/she doesn't stop doing something, but he/she keeps doing it, how often will you punish him/her?	0.560	0.141 *0.121*	N = 2702 df = 5 χ^2 = 85.5 **SRMR = 0.05** NNFI = 0.92 **CFI = 0.96** H = 0.83 Acceptable
cpa11f3. How often does this child **get away** with things that you feel should have been punished? (reverse coded)	0.817	0.424 *0.365*	
cpa11f4. How often is this child able to **get out** of punishment when he/she really sets his/her mind to it? (reverse coded)	0.750	0.295 *0.254*	
cpa11f5. When you discipline this child, how often does he/she **ignore** the punishment? (reverse coded)	0.670	0.210 *0.181*	
cpa13f7. How often do you think that the level of punishment you give this child depends on your **mood**? (reverse coded)	0.435	0.093 *0.080*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).
d Item deleted in model modification.

Table A46: Final recommended structural equation model for W3/K-cohort/mother, parenting consistency

W3/K-Cohort/Mother *Parenting consistency*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
epa11m1. When you give this child an instruction or make a request to do something, how often do you **make sure** that he/she does it?[d]	–	–	
epa11m2. If you tell this child he/she will get **punish**ed if he/she doesn't stop doing something, but he/she keeps doing it, how often will you punish him/her?	0.523	0.104 *0.091*	N = 3674 df = 5 χ^2 = 103.5
epa11m3. How often does this child **get away** with things that you feel should have been punished? (reverse coded)	0.792	0.307 *0.269*	**SRMR = 0.04** NNFI = 0.94 **CFI = 0.97**
epa11m4. How often is this child able to **get out** of punishment when he/she really sets his/her mind to it? (reverse coded)	0.827	0.378 *0.331*	H = 0.86
epa11m5. When you discipline this child, how often does he/she **ignore** the punishment? (reverse coded)	0.772	0.275 *0.241*	Acceptable
epa13m7. How often do you think that the level of punishment you give this child depends on your **mood**? (reverse coded)	0.433	0.077 *0.067*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).
d Item deleted in model modification.

Table A47: Final recommended structural equation model for W3/K-cohort/father, parenting consistency

W3/K-Cohort/Father *Parenting consistency*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
epa11f1. When you give this child an instruction or make a request to do something, how often do you **make sure** that he/she does it?[d]	–	–	
epa11f2. If you tell this child he/she will get **punish**ed if he/she doesn't stop doing something, but he/she keeps doing it, how often will you punish him/her?	0.459	0.102 *0.088*	N = 2666 df = 5 χ^2 = 72.0
epa11f3. How often does this child **get away** with things that you feel should have been punished? (reverse coded)	0.786	0.361 *0.311*	**SRMR = 0.04** NNFI = 0.92 **CFI = 0.96**
epa11f4. How often is this child able to **get out** of punishment when he/she really sets his/her mind to it? (reverse coded)	0.765	0.323 *0.279*	H = 0.82
epa11f5. When you discipline this child, how often does he/she **ignore** the punishment? (reverse coded)	0.737	0.284 *0.245*	Acceptable
epa13f7. How often do you think that the level of punishment you give this child depends on your **mood**? (reverse coded)	0.418	0.089 *0.077*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).
d Item deleted in model modification.

Table A48: Final recommended structural equation model for W4/B-cohort/mother, parenting consistency

W4/B-Cohort/Mother *Parenting consistency*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
dpa11m1. When you give this child an instruction or make a request to do something, how often do you **make sure** that he/she does it?[d]	–	–	
dpa11m2. If you tell this child he/she will get **punish**ed if he/she doesn't stop doing something, but he/she keeps doing it, how often will you punish him/her?	0.570	0.135 *0.117*	N = 4202 df = 5 χ^2 = 97.5
dpa11m3. How often does this child **get away** with things that you feel should have been punished? (reverse coded)	0.829	0.423 *0.367*	**SRMR = 0.06** NNFI = 0.94 **CFI = 0.97**
dpa11m4. How often is this child able to g**et out** of punishment when he/she really sets his/her mind to it? (reverse coded)	0.758	0.285 *0.247*	H = 0.84
dpa11m5. When you discipline this child, how often does he/she **ignore** the punishment? (reverse coded)	0.710	0.229 *0.198*	Acceptable
dpa13m7. How often do you think that the level of punishment you give this child depends on your **mood**? (reverse coded)	0.420	0.082 *0.071*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).
d Item deleted in model modification.

Table A49: Final recommended structural equation model for W4/B-cohort/father, parenting consistency

W4/B-Cohort/Father *Parenting consistency*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
dpa11f1. When you give this child an instruction or make a request to do something, how often do you **make sure** that he/she does it?[d]	–	–	
dpa11f2. If you tell this child he/she will get **punished** if he/she doesn't stop doing something, but he/she keeps doing it, how often will you punish him/her?	0.527	0.125 *0.108*	N = 2700 df = 5 χ^2 = 104.4
dpa11f3. How often does this child **get away** with things that you feel should have been punished? (reverse coded)	0.808	0.398 *0.343*	**SRMR = 0.05** NNFI = 0.90 CFI = 0.95
dpa11f4. How often is this child able to **get out** of punishment when he/she really sets his/her mind to it? (reverse coded)	0.755	0.300 *0.258*	H = 0.83
dpa11f5. When you discipline this child, how often does he/she ignore the punishment? (reverse coded)	0.712	0.247 *0.213*	Not acceptable
dpa13f7. How often do you think that the level of punishment you give this child depends on your **mood**? (reverse coded)	0.432	0.091 *0.078*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).
d Item deleted in model modification.

Table A50: Final recommended structural equation model for W4/K-cohort/mother, parenting consistency

W4/K-Cohort/Mother *Parenting consistency*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
fpa11m1. When you give this child an instruction or make a request to do something, how often do you **make sure** that he/she does it?[d]	–	–	
fpa11m2. If you tell this child he/she will get **punished** if he/she doesn't stop doing something, but he/she keeps doing it, how often will you punish him/her?	0.522	0.100 *0.088*	N = 4011 df = 5 χ^2 = 93.2
fpa11m3. How often does this child **get away** with things that you feel should have been punished? (reverse coded)	0.825	0.359 *0.315*	**SRMR = 0.03** NNFI = 0.95 **CFI = 0.97**
fpa11m4. How often is this child able to **get out** of punishment when he/she really sets his/her mind to it? (reverse coded)	0.811	0.330 *0.289*	H = 0.86
fpa11m5. When you discipline this child, how often does he/she **ignore** the punishment? (reverse coded)	0.769	0.262 *0.230*	Acceptable
fpa13m7. How often do you think that the level of punishment you give this child depends on your **mood**? (reverse coded)	0.486	0.089 *0.078*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).
d Item deleted in model modification.

Table A51: Final recommended structural equation model for W4/K-cohort/father, parenting consistency

W4/K-Cohort/Father *Parenting consistency*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
fpa11f1. When you give this child an instruction or make a request to do something, how often do you **make sure** that he/she does it?[d]	–	–	
fpa11f2. If you tell this child he/she will get **punish**ed if he/she doesn't stop doing something, but he/she keeps doing it, how often will you punish him/her?	0.435	0.087 *0.075*	N = 2699 df = 5 χ^2 = 66.2
fpa11f3. How often does this child **get away** with things that you feel should have been punished? (reverse coded)	0.788	0.335 *0.291*	**SRMR = 0.04** NNFI = 0.94 **CFI = 0.97**
fpa11f4. How often is this child able to **get out** of punishment when he/she really sets his/her mind to it? (reverse coded)	0.796	0.350 *0.304*	H = 0.84
fpa11f5. When you discipline this child, how often does he/she **ignore** the punishment? (reverse coded)	0.752	0.279 *0.242*	Acceptable
fpa13f7. How often do you think that the level of punishment you give this child depends on your **mood**? (reverse coded)	0.480	0.101 *0.088*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).
d Item deleted in model modification.

Table A52: Final recommended structural equation model for W1/B-cohort/mother, separation anxiety

W1/B-Cohort/Mother *Separation anxiety**	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
apa05br. Child is happier with me than with babysitters (**self**).	0.620	0.090 *0.079*	N = 4931 df = 9 χ^2 = 385.7 **SRMR = 0.06** NNFI = 0.93 **CFI = 0.96** H = 0.91 Acceptable
apa05cr. When away from child, I **worry** about whether or not the babysitter/carer is able to soothe and comfort the child if he/she is lonely or upset.	0.834	0.246 *0.215*	
apa05dr. Only a **mother** just naturally **knows** how to comfort her distressed child.	0.774	0.172 *0.150*	
apa05er. I worry when someone else cares for child (**worothr**).	0.864	0.305 *0.267*	
apa05fr. I am naturally better at keeping child **safe** than any other person.	0.788	0.185 *0.162*	
apa05gr. A child is likely to get **upset** when he/she is left with a babysitter or carer.	0.739	0.145 *0.127*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).
*All variables have been reverse coded prior to analysis—higher scores are associated with overprotection.

Table A53: Final recommended structural equation model for W3/B-cohort/mother, inductive reasoning

W3/B-Cohort/Mother *Inductive reasoning*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
cpa09m2. Talk it over and **reason** with this child when he/she misbehaved?	0.731	0.100 *0.092*	N = 3760 df = 5 χ^2 = 11.6 **SRMR = 0.01** **NNFI = 0.99** **CFI = 0.99** H = 0.94 Good
cpa09m1. **Explain** to this child why he/she was being corrected?	0.901	0.306 *0.283*	
cpa09m3. Give this child reasons why **rules** should be obeyed?	0.896	0.288 *0.266*	
cpa09m4. Explain to this child the **consequences** of his/her behaviour?	0.844	0.187 *0.173*	
cpa09m5. **Emphasise** to this child the reasons for rules?	0.854	0.201 *0.186*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A54: Final recommended structural equation model for W3/B-cohort/father, inductive reasoning

W3/B-Cohort/Father *Inductive reasoning*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
cpa09f2. Talk it over and **reason** with this child when he/she misbehaved?	0.750	0.088 *0.082*	N = 2750 df = 5 χ^2 = 54.7 **SRMR = 0.03** **NNFI = 0.99** **CFI = 0.99** H = 0.95 Good
cpa09f1. **Explain** to this child why he/she was being corrected?	0.920	0.310 *0.290*	
cpa09f3. Give this child reasons why **rules** should be obeyed?	0.900	0.243 *0.227*	
cpa09f4. Explain to this child the **consequences** of his/her behaviour?	0.903	0.252 *0.236*	
cpa09f5. **Emphasise** to this child the reasons for rules?	0.864	0.175 *0.164*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A55: Final recommended structural equation model for W3/K-cohort/mother, inductive reasoning

W3/K-Cohort/Mother *Inductive reasoning*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
epa09m2. Talk it over and **reason** with this child when he/she misbehaved?	0.705	0.083 *0.077*	N = 3713 df = 5 χ^2 = 22.0 **SRMR = 0.02** **NNFI = 0.99** **CFI = 0.99** H = 0.94 Good
epa09m1. **Explain** to this child why he/she was being corrected?	0.912	0.323 *0.300*	
epa09m3. Give this child reasons why **rules** should be obeyed?	0.895	0.267 *0.248*	
epa09m4. Explain to this child the **consequences** of his/her behaviour?	0.869	0.212 *0.197*	
epa09m5. **Emphasise** to this child the reasons for rules?	0.857	0.192 *0.178*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A56: Final recommended structural equation model for W3/K-cohort/father, inductive reasoning

W3/K-Cohort/Father *Inductive reasoning*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
epa09f2. Talk it over and **reason** with this child when he/she misbehaved?	0.740	0.062 *0.059*	N = 2703 df = 5 χ^2 = 124.2 **SRMR = 0.05** **NNFI = 0.98** **CFI = 0.99** H = 0.96 Good
epa09f1. **Explain** to this child why he/she was being corrected?	0.896	0.173 *0.165*	
epa09f3. Give this child reasons why **rules** should be obeyed?	0.904	0.187 *0.178*	
epa09f4. Explain to this child the **consequences** of his/her behaviour?	0.947	0.349 *0.332*	
epa09f5. **Emphasise** to this child the reasons for rules?	0.935	0.280 *0.266*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A57: Final recommended structural equation model for W4/B-cohort/mother, inductive reasoning

W4/B-Cohort/Mother *Inductive reasoning*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
dpa09m1. **Explain** to this child why he/she was being corrected?	0.933	0.331 *0.312*	N = 4151 df = 5 χ^2 = 39.6 **SRMR = 0.02** **NNFI = 0.99** **CFI = 0.99** H = 0.95 Good
dpa09m2. Talk it over and **reason** with this child when he/she misbehaved?	0.765	0.084 *0.079*	
dpa09m3. Give this child reasons why **rules** should be obeyed?	0.912	0.247 *0.233*	
dpa09m4. Explain to this child the **consequences** of his/her behaviour?	0.898	0.212 *0.200*	
dpa09m5. **Emphasise** to this child the reasons for rules?	0.885	0.187 *0.176*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A58: Final recommended structural equation model for W4/B-cohort/father, inductive reasoning

W4/B-Cohort/Father *Inductive reasoning*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
dpa09f1. **Explain** to this child why he/she was being corrected?	0.894	0.212 *0.200*	N = 2697 df = 5 χ^2 = 69.9 **SRMR = 0.05** **NNFI = 0.98** **CFI = 0.99** H = 0.95 Good
dpa09f2. Talk it over and **reason** with this child when he/she misbehaved?	0.711	0.068 *0.064*	
dpa09f3. Give this child reasons why **rules** should be obeyed?	0.884	0.193 *0.182*	
dpa09f4. Explain to this child the **consequences** of his/her behaviour?	0.926	0.307 *0.289*	
dpa09f5. **Emphasise** to this child the reasons for rules?	0.919	0.282 *0.265*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A59: Final recommended structural equation model for W4/K-cohort/mother, inductive reasoning

W4/K-Cohort/Mother *Inductive reasoning*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
fpa09m1. **Explain** to this child why he/she was being corrected?	0.929	0.326 *0.306*	N = 4021 df = 5 χ^2 = 51.3 **SRMR = 0.02** **NNFI = 0.99** **CFI = 0.99** H = 0.95 Good
fpa09m2. Talk it over and **reason** with this child when he/she misbehaved?	0.751	0.083 *0.078*	
fpa09m3. Give this child reasons why **rules** should be obeyed?	0.911	0.258 *0.242*	
fpa09m4. Explain to this child the **consequences** of his/her behaviour?	0.887	0.200 *0.188*	
fpa09m5. **Emphasise** to this child the reasons for rules?	0.885	0.197 *0.185*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A60: Final recommended structural equation model for W4/K-cohort/father, inductive reasoning

W4/K-Cohort/Father *Inductive reasoning*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
fpa09f1. **Explain** to this child why he/she was being corrected?	0.891	0.294 *0.271*	N = 2707 df = 5 χ^2 = 17.3 **SRMR = 0.01** **NNFI = 0.99** **CFI = 0.99** H = 0.93 Good
fpa09f2. Talk it over and **reason** with this child when he/she misbehaved?	0.732	0.107 *0.098*	
fpa09f3. Give this child reasons why **rules** should be obeyed?	0.862	0.226 *0.208*	
fpa09f4. Explain to this child the **consequences** of his/her behaviour?	0.874	0.251 *0.231*	
fpa09f5. **Emphasise** to this child the reasons for rules?	0.851	0.208 *0.191*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A61: Final recommended structural equation model for W2/B-cohort/mother, parenting efficacy

W2/B-Cohort/Mother *Parenting efficacy*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
bpa12m1r. Does this child **behave** in a manner different from the way you want him/her to? (reverse scored)	0.467	0.030 *0.028*	N = 3488 df = 1 χ^2 = 23.5 $\theta_{\delta(1r,2r)}$ = 0.29 **SRMR = 0.02** **NNFI = 0.96** **CFI = 0.99** H = 0.86 Good
bpa12m2r. Do you think that this child's behaviour is more than you can **handle**? (reverse scored)	0.657	0.152 *0.144*	
bpa12m3. Do you feel that you are good at getting this child to **do** what you want him/her to do?	0.837	0.406 *0.385*	
bpa12m4. Do you feel that you are in control and **on top** of things when you are caring for this child?	0.857	0.467 *0.443*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A62: Final recommended structural equation model for W2/B-cohort/father, parenting efficacy

W2/B-Cohort/Father *Parenting efficacy*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
bpa12f1r. Does this child **behave** in a manner different from the way you want him/her to? (reverse coded)	0.406	0.033 *0.031*	N = 3090 df = 1 χ^2 = 45.6
bpa12f2r. Do you think that this child's behaviour is more than you can **handle**? (reverse coded)	0.575	0.124 *0.117*	$\theta_{\delta(1r,2r)}$ = 0.31
bpa12f3. Do you feel that you are good at getting this child to **do** what you want him/her to do?	0.848	0.492 *0.465*	**SRMR = 0.03** NNFI = 0.90 **CFI = 0.98**
bpa12f4. Do you feel that you are in control and **on top** of things when you are caring for this child?	0.821	0.408 *0.386*	H = 0.84 Acceptable

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A63: Final recommended structural equation model for W2/K-cohort/mother, parenting efficacy

W2/K-Cohort/Mother *Parenting efficacy*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
dpa12m1r. Does this child **behave** in a manner different from the way you want him/her to? (reverse coded)	0.523	0.017 *0.016*	N = 3404 df = 1 χ^2 = 15.2
dpa12m2r. Do you think that this child's behaviour is more than you can **handle**? (reverse coded)	0.670	0.128 *0.123*	$\theta_{\delta(1r,2r)}$ = 0.37
dpa12m3. Do you feel that you are good at getting this child to **do** what you want him/her to do?	0.878	0.443 *0.425*	**SRMR = 0.01** **NNFI = 0.98** **CFI = 0.99**
dpa12m4. Do you feel that you are in control and **on top** of things when you are caring for this child?	0.881	0.454 *0.436*	H = 0.89 Good

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A64: Final recommended structural equation model for W2/K-cohort/father, parenting efficacy

W2/K-Cohort/Father *Parenting efficacy*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
dpa12f1r. Does this child **behave** in a manner different from the way you want him/her to? (reverse coded)	0.466	0.012 *0.011*	N = 2918 df = 1 χ^2 = 24.3 $\theta_{\delta(1r,2r)}$ = 0.32 **SRMR = 0.02** **NNFI = 0.96** **CFI = 0.99** H = 0.88 Good
dpa12f2r. Do you think that this child's behaviour is more than you can **handle**? (reverse coded)	0.684	0.151 *0.144*	
dpa12f3. Do you feel that you are good at getting this child to **do** what you want him/her to do?	0.839	0.348 *0.333*	
dpa12f4. Do you feel that you are in control and **on top** of things when you are caring for this child?	0.892	0.534 *0.511*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A65: Final recommended structural equation model for W3/B-cohort/mother, parenting efficacy

W3/B-Cohort/Mother *Parenting efficacy*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
cpa12m1r. Does this child **behave** in a manner different from the way you want him/her to? (reverse coded)	0.489	0.026 *0.025*	N = 3785 df = 1 χ^2 = 20.3 $\theta_{\delta(1r,2r)}$ = 0.33 **SRMR = 0.02** **NNFI = 0.97** **CFI = 0.99** H = 0.86 Good
cpa12m2r. Do you think that this child's behaviour is more than you can **handle**? (reverse coded)	0.663	0.161 *0.153*	
cpa12m3. Do you feel that you are good at getting this child to **do** what you want him/her to do?	0.807	0.345 *0.327*	
cpa12m4. Do you feel that you are in control and **on top** of things when you are caring for this child?	0.867	0.522 *0.495*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A66: Final recommended structural equation model for W3/B-cohort/father, parenting efficacy

W3/B-Cohort/Father *Parenting efficacy*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
cpa12f1r. Does this child **behave** in a manner different from the way you want him/her to? (reverse coded)	0.396	–0.001 *0.000*	N = 2755 df = 1 χ^2 = 17.5
cpa12f2r. Do you think that this child's behaviour is more than you can **handle**? (reverse coded)	0.649	0.158 *0.152*	$\theta_{\delta(1r,2r)}$ = 0.36
cpa12f3. Do you feel that you are good at getting this child to **do** what you want him/her to do?	0.799	0.311 *0.298*	**SRMR = 0.02** **NNFI = 0.96** **CFI = 0.99**
cpa12f4. Do you feel that you are in control and **on top** of things when you are caring for this child?	0.885	0.574 *0.551*	H = 0.86 Good

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A67: Final recommended structural equation model for W3/K-cohort/mother, parenting efficacy

W3/K-Cohort/Mother *Parenting efficacy*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
epa12m1r. Does this child **behave** in a manner different from the way you want him/her to? (reverse scored)	0.562	0.034 *0.032*	N = 3707 df = 1 χ^2 = 11.3
epa12m2r. Do you think that this child's behaviour is more than you can **handle**? (reverse scored)	0.714	0.183 *0.173*	$\theta_{\delta(1r,2r)}$ = 0.30
epa12m3. Do you feel that you are good at getting this child to **do** what you want him/her to do?	0.841	0.402 *0.381*	**SRMR = 0.01** **NNFI = 0.98** **CFI = 0.99**
epa12m4. Do you feel that you are in control and **on top** of things when you are caring for this child?	0.852	0.437 *0.414*	H = 0.87 Good

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A68: Final recommended structural equation model for W3/K-cohort/father, parenting efficacy

W3/K-Cohort/Father *Parenting efficacy*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
epa12f1r. Does this child **behave** in a manner different from the way you want him/her to? *(reverse scored)*	0.546	0.042 *0.040*	N = 2709 df = 1 $\chi^2 = 21.6$
epa12f2r. Do you think that this child's behaviour is more than you can **handle**? *(reverse scored)*	0.718	0.173 *0.164*	$\theta_{\delta(1r,2r)} = 0.24$
epa12f3. Do you feel that you are good at getting this child to **do** what you want him/her to do?	0.838	0.368 *0.348*	**SRMR = 0.02** **NNFI = 0.96** **CFI = 0.99**
epa12f4. Do you feel that you are in control and **on top** of things when you are caring for this child?	0.872	0.474 *0.448*	H = 0.87 Good

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A69: Final recommended structural equation model for W4/B-cohort/mother, parenting efficacy

W4/B-Cohort/Mother *Parenting efficacy*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
dpa12m1r. Does this child **behave** in a manner different from the way you want him/her to? (reverse scored)	0.460	–0.001 *–0.001*	N = 4149 df = 1 $\chi^2 = 4.7$
dpa12m2r. Do you think that this child's behaviour is more than you can **handle**? (reverse scored)	0.644	0.135 *0.130*	$\theta_{\delta(1r,2r)} = 0.42$
dpa12m3. Do you feel that you are good at getting this child to **do** what you want him/her to do?	0.861	0.406 *0.390*	**SRMR = 0.01** **NNFI = 0.99** **CFI = 0.99**
dpa12m4. Do you feel that you are in control and **on top** of things when you are caring for this child?	0.885	0.500 *0.481*	H = 0.88 Good

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A70: Final recommended structural equation model for W4/B-cohort/father, parenting efficacy

W4/B-Cohort/Father *Parenting efficacy*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
dpa12f1r. Does this child **behave** in a manner different from the way you want him/her to? (reverse scored)	0.473	0.019 *0.018*	N = 2715 df = 1 χ^2 = 34.2
dpa12f2r. Do you think that this child's behaviour is more than you can **handle**? (reverse scored)	0.708	0.161 *0.154*	$\theta_{\delta(1r,2r)}$ = 0.26
dpa12f3. Do you feel that you are good at getting this child to **do** what you want him/her to do?	0.872	0.439 *0.419*	**SRMR = 0.02** NNFI = 0.94 **CFI = 0.99**
dpa12f4. Do you feel that you are in control and **on top** of things when you are caring for this child?	0.870	0.429 *0.409*	H = 0.88 Acceptable

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A71: Final recommended structural equation model for W4/K-cohort/mother, parenting efficacy

W4/K-Cohort/Mother *Parenting efficacy*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
fpa12m1r. Does this child **behave** in a manner different from the way you want him/her to? (reverse coded)	0.481	0.001 *0.001*	N = 4020 df = 1 χ^2 = 20.7
fpa12m2r. Do you think that this child's behaviour is more than you can **handle**? (reverse coded)	0.636	0.137 *0.132*	$\theta_{\delta(1r,2r)}$ = 0.45
fpa12m3. Do you feel that you are good at getting this child to **do** what you want him/her to do?	0.844	0.377 *0.362*	**SRMR = 0.01** **NNFI = 0.98** **CFI = 0.99**
fpa12m4. Do you feel that you are in control and **on top** of things when you are caring for this child?	0.885	0.526 *0.505*	H = 0.88 Good

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A72: Final recommended structural equation model for W4/K-cohort/father, parenting efficacy

W4/K-Cohort/Father *Parenting efficacy*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
fpa12f1r. Does this child **behave** in a manner different from the way you want him/her to? (reverse coded)	0.540	0.028 *0.027*	N = 2724 df = 1 $\chi^2 = 22.3$
fpa12f2r. Do you think that this child's behaviour is more than you can **handle**? (reverse coded)	0.691	0.134 *0.128*	$\theta_{\delta(1r,2r)} = 0.31$
fpa12f3. Do you feel that you are good at getting this child to **do** what you want him/her to do?	0.839	0.324 *0.310*	**SRMR = 0.02** **NNFI = 0.96** **CFI = 0.99**
fpa12f4. Do you feel that you are in control and **on top** of things when you are caring for this child?	0.903	0.560 *0.535*	H = 0.89 Good

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Appendix C: Initial model fits for models that failed to achieve fit criteria and/or were refitted

Table A73: Initial model fit for W2/K-cohort/mother (subsequently modified), parenting anger

W2/K-Cohort/Mother *(subsequently modified)* *Parenting anger*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
dpa13m3. Of all the times that you talk to this child about his/her behaviour, how often is this **disapproval**?	0.700	0.285 *0.240*	N = 4221 df = 5 χ^2 = 63.2 **SRMR = 0.04** NNFI = 0.94 **CFI = 0.97** H = 0.79 Acceptable
dpa13m4. How often are you **angry** when you punish this child?	0.565	0.173 *0.146*	
dpa13m5. How often do you feel you are having **problems** managing this child in general?	0.762	0.378 *0.319*	
dpa13m2. Of all the times you talk to this child about his or her behaviour, how often is this **praise**?[d] (reverse coded)	0.394	0.097 *0.082*	
dpa13m6. How often do you tell this child that he/she is **not as good** as others?	0.670	0.252 *0.213*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).
d *Item was reverse coded and labelled nopraise.*

Table A74: Initial model fit for W2/K-cohort/father (subsequently modified), parenting anger

W2/K-Cohort/Father *(subsequently modified)* *Parenting anger*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
cpa13m3. Of all the times that you talk to this child about his/her behaviour, how often is this **disapproval**?	0.630	0.233 *0.198*	N = 2814 df = 5 χ^2 = 37.7 **SRMR = 0.04** NNFI = 0.94 **CFI = 0.97** H = 0.78 Acceptable
cpa13m4. How often are you **angry** when you punish this child?	0.580	0.195 *0.166*	
cpa13m5. How often do you feel you are having **problems** managing this child in general?	0.788	0.464 *0.394*	
cpa13m2. Of all the times you talk to this child about his or her behaviour, how often is this **praise**?[d] (reverse coded)	0.296	0.072 *0.061*	
cpa13m6. How often do you tell this child that he/she is **not as good** as others?	0.606	0.214 *0.182*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).
d Item was reverse coded and labelled *nopraise*.

Table A75: Initial model fit for W3/B-cohort/mother (subsequently modified), parenting anger

W3/B-Cohort/Mother *(subsequently modified)* *Parenting anger*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
cpa13m3. Of all the times that you talk to this child about his/her behaviour, how often is this **disapproval**?	0.636	0.252 *0.210*	N = 3747 df = 5 χ^2 = 59.3 **SRMR = 0.04** **NNFI = 0.96** **CFI = 0.96** H = 0.76 Good
cpa13m4. How often are you **angry** when you punish this child?	0.594	0.216 *0.180*	
cpa13m5. How often do you feel you are having **problems** managing this child in general?	0.759	0.421 *0.350*	
cpa13m2. Of all the times you talk to this child about his or her behaviour, how often is this **praise**?[d] (reverse coded)	0.443	0.130 *0.108*	
cpa13m6. How often do you tell this child that he/she is **not as good** as others?	0.546	0.183 *0.152*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).
d Item was reverse coded and labelled *nopraise*.

Table A76: Initial model fit for W3/B-cohort/father (subsequently modified), parenting anger

W3/B-Cohort/Father *(subsequently modified)* *Parenting anger*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
cpa13f3. Of all the times that you talk to this child about his/her behaviour, how often is this **disapproval**?	0.689	0.279 *0.233*	N = 2719 df = 5 χ^2 = 92.9 **SRMR = 0.06** NNFI = 0.87 CFI = 0.93 H = 0.79 Not acceptable
cpa13f4. How often are you **angry** when you punish this child?	0.583	0.188 *0.157*	
cpa13f5. How often do you feel you are having **problems** managing this child in general?	0.751	0.366 *0.305*	
cpa13f2. Of all the times you talk to this child about his or her behaviour, how often is this **praise**?[d] (reverse coded)	0.530	0.157 *0.131*	
cpa13f6. How often do you tell this child that he/she is **not as good** as others?	0.612	0.208 *0.174*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).
d Item was reverse coded and labelled *nopraise*.

Table A77: Initial model fit for W3/K-cohort/mother (subsequently modified), parenting anger

W3/K-Cohort/Mother *(subsequently modified)* *Parenting anger*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
epa13m3. Of all the times that you talk to this child about his/her behaviour, how often is this **disapproval**?	0.749	0.356 *0.299*	N = 3691 df = 5 χ^2 = 68.0 **SRMR = 0.04** NNFI = 0.92 **CFI = 0.96** H = 0.79 Acceptable
epa13m4. How often are you **angry** when you punish this child?	0.557	0.168 *0.141*	
epa13m5. How often do you feel you are having **problems** managing this child in general?	0.747	0.352 *0.296*	
epa13m2. Of all the times you talk to this child about his or her behaviour, how often is this **praise**?[d] (reverse coded)	0.550	0.165 *0.139*	
epa13m6. How often do you tell this child that he/she is **not as good** as others?	0.522	0.149 *0.125*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).
d Item was reverse coded and labelled *nopraise*.

Table A78: Initial model fit for W3/K-cohort/father (subsequently modified), parenting anger

W3/K-Cohort/Father *(subsequently modified)* *Parenting anger*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
epa13f3. Of all the times that you talk to this child about his/her behaviour, how often is this **disapproval**?	0.757	0.357 *0.300*	N = 2687 df = 5 χ^2 = 126.4 **SRMR = 0.06** NNFI = 0.79 CFI = 0.84 H = 0.80 Not acceptable
epa13f4. How often are you **angry** when you punish this child?	0.554	0.161 *0.135*	
epa13f5. How often do you feel you are having **problems** managing this child in general?	0.741	0.330 *0.277*	
epa13f2. Of all the times you talk to this child about his or her behaviour, how often is this **praise**?[d] (reverse coded)	0.582	0.177 *0.149*	
epa13f6. How often do you tell this child that he/she is **not as good** as others?	0.560	0.164 *0.138*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).
d Item was reverse coded and labelled *nopraise*.

Table A79: Initial model fit for W4/B-Cohort/Mother (subsequently modified), parenting anger

W4/B-Cohort/Mother *(subsequently modified)* *Parenting anger*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
dpa13m3. Of all the times that you talk to this child about his/her behaviour, how often is this **disapproval**?	0.726	0.312 *0.262*	N = 4145 df = 5 χ^2 = 89.5 **SRMR = 0.05** NNFI = 0.92 **CFI = 0.96** H = 0.80 Acceptable
dpa13m4. How often are you **angry** when you punish this child?	0.543	0.157 *0.132*	
dpa13m5. How often do you feel you are having **problems** managing this child in general?	0.761	0.368 *0.309*	
dpa13m2. Of all the times you talk to this child about his or her behaviour, how often is this **praise**?[d] (reverse coded)	0.533	0.152 *0.128*	
dpa13m6. How often do you tell this child that he/she is **not as good** as others?	0.615	0.202 *0.170*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).
d Item was reverse coded and labelled *nopraise*.

Table A80: Initial model fit for W4/B-cohort/father (subsequently modified), parenting anger

W4/B-Cohort/Father *(subsequently modified)* *Parenting anger*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
dpa13f3. Of all the times that you talk to this child about his/her behaviour, how often is this **disapproval**?	0.728	0.320 *0.268*	N = 2688 df = 5 χ^2 = 133.1 **SRMR = 0.07** NNFI = 0.80 CFI = 0.90 H = 0.79 Not acceptable
dpa13f4. How often are you **angry** when you punish this child?	0.587	0.186 *0.156*	
dpa13f5. How often do you feel you are having **problems** managing this child in general?	0.739	0.337 *0.282*	
dpa13f2. Of all the times you talk to this child about his or her behaviour, how often is this **praise**?[d] (reverse coded)	0.574	0.177 *0.148*	
dpa13f6. How often do you tell this child that he/she is **not as good** as others?	0.571	0.175 *0.146*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).
d Item was reverse coded and labelled *nopraise*.

Table A81: Initial model fit for W4/K-cohort/mother (subsequently modified), parenting anger

W4/K-Cohort/Mother *(subsequently modified)* *Parenting anger*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
fpa13m3. Of all the times that you talk to this child about his/her behaviour, how often is this **disapproval**?	0.757	0.315 *0.268*	N = 4020 df = 5 χ^2 = 254.2 **SRMR = 0.05** NNFI = 0.95 **CFI = 0.97** H = 0.82 Acceptable
fpa13m4. How often are you **angry** when you punish this child?	0.597	0.165 *0.140*	
fpa13m5. How often do you feel you are having **problems** managing this child in general?	0.790	0.374 *0.318*	
fpa13m2. Of all the times you talk to this child about his or her behaviour, how often is this **praise**?[d] (reverse coded)	0.542	0.137 *0.117*	
fpa13m6. How often do you tell this child that he/she is **not as good** as others?	0.628	0.184 *0.157*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).
d Item was reverse coded and labelled *nopraise*.

Table A82: Initial model fit for W4/K-cohort/father (subsequently modified), parenting anger

W4/K-Cohort/Father *(subsequently modified)* *Parenting anger*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
fpa13f3. Of all the times that you talk to this child about his/her behaviour, how often is this **disapproval**?	0.735	0.283 *0.241*	N = 2709 df = 5 χ^2 = 137.2 **SRMR = 0.07** NNFI = 0.84 CFI = 0.92 H = 0.82 Not acceptable
fpa13f4. How often are you **angry** when you punish this child?	0.568	0.148 *0.126*	
fpa13f5. How often do you feel you are having **problems** managing this child in general?	0.790	0.371 *0.315*	
fpa13f2. Of all the times you talk to this child about his or her behaviour, how often is this **praise**?[d] (reverse coded)	0.556	0.142 *0.121*	
fpa13f6. How often do you tell this child that he/she is **not as good** as others?	0.689	0.232 *0.197*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).
d Item was reverse coded and labelled *nopraise*.

Table A83: Initial model fit for W2/K-cohort/mother (subsequently modified), parenting consistency

W1/K-Cohort/Mother *(subsequently modified)* *Parenting consistency*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
cpa11m1. When you give this child an instruction or make a request to do something, how often do you **make sure** that he/she does it?	0.479	0.107 *0.092*	N = 4891 df = 5 χ^2 = 261.0 **SRMR = 0.07** NNFI = 0.87 CFI = 0.93 H = 0.83 Not acceptable
cpa11m2. If you tell this child he/she will get **punished** if he/she doesn't stop doing something, but he/she keeps doing it, how often will you punish him/her?	0.603	0.163 *0.140*	
cpa11m3. How often does this child **get away** with things that you feel should have been punished? (reverse coded)	0.780	0.343 *0.294*	
pa11m4. How often is this child able to **get out** of punishment when he/she really sets his/her mind to it? (reverse coded)	0.786	0.355 *0.304*	
cpa11m5. When you discipline this child, how often does he/she **ignore** the punishment? (reverse coded)	0.657	0.200 *0.171*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A84: Initial model fit for W1/K-cohort/father (subsequently modified), parenting consistency

W1/K-Cohort/Father *(subsequently modified)* *Parenting consistency*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
cpa11f1. When you give this child an instruction or make a request to do something, how often do you **make sure** that he/she does it?	0.495	0.122 0.103	N = 3325 df = 5 χ^2 = 91.9 **SRMR = 0.05** NNFI = 0.92 **CFI = 0.96** H = 0.81 Acceptable
cpa11f2. If you tell this child he/she will get **punished** if he/she doesn't stop doing something, but he/she keeps doing it, how often will you punish him/her?	0.652	0.21 *0.178*	
cpa11f3. How often does this child **get away** with things that you feel should have been punished? (reverse coded)	0.753	0.323 *0.274*	
cpa11f4. How often is this child able to **get out** of punishment when he/she really sets his/her mind to it? (reverse coded)	0.760	0.333 *0.282*	
cpa11f5. When you discipline this child, how often does he/she **ignore** the punishment? (reverse coded)	0.627	0.192 *0.163*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A85: Initial model fit for W2/K-cohort/mother (subsequently modified), parenting consistency

W2/K-Cohort/Mother *(subsequently modified)* *Parenting consistency*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
dpa11m1. When you give this child an instruction or make a request to do something, how often do you **make sure** that he/she does it?	0.485	0.095 *0.079*	N = 4202 df = 9 χ^2 = 320.2 **SRMR = 0.08** NNFI = 0.87 CFI = 0.92 H = 0.85 Not acceptable
dpa11m2. If you tell this child he/she will get **punished** if he/she doesn't stop doing something, but he/she keeps doing it, how often will you punish him/her?	0.602	0.142 *0.118*	
dpa11m3. How often does this child **get away** with things that you feel should have been punished? (reverse coded)	0.800	0.334 *0.278*	
dpa11m4. How often is this child able to **get out** of punishment when he/she really sets his/her mind to it? (reverse coded)	0.795	0.325 *0.271*	
dpa11m5. When you discipline this child, how often does he/she **ignore** the punishment? (reverse coded)	0.712	0.217 *0.181*	
dpa13m7. How often do you think that the level of punishment you give this child depends on your **mood**? (reverse coded)	0.453	0.086 *0.072*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A86: Initial model fit for W2/K-cohort/father (subsequently modified), parenting consistency

W2/K-Cohort/Father *(subsequently modified)* *Parenting consistency*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
dpa11f1. When you give this child an instruction or make a request to do something, how often do you **make sure** that he/she does it?	0.565	0.125 *0.104*	N = 2900 df = 9 χ^2 = 292.8 SRMR = 0.10 NNFI = 0.83 CFI = 0.90 H = 0.85 Not acceptable
dpa11f2. If you tell this child he/she will get **punished** if he/she doesn't stop doing something, but he/she keeps doing it, how often will you punish him/her?	0.668	0.182 *0.151*	
dpa11f3. How often does this child **get away** with things that you feel should have been punished? (reverse coded)	0.779	0.299 *0.249*	
dpa11f4. How often is this child able to **get out** of punishment when he/she really sets his/her mind to it? (reverse coded)	0.791	0.318 *0.265*	
dpa11f5. When you discipline this child, how often does he/she **ignore** the punishment? (reverse coded)	0.702	0.208 *0.173*	
dpa13f7. How often do you think that the level of punishment you give this child depends on your **mood**? (reverse coded)	0.390	0.069 *0.057*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A87: Initial model fit for W3/B-cohort/mother (subsequently modified), parenting consistency

W3/B-Cohort/Mother *(subsequently modified)* *Parenting consistency*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
cpa11m1. When you give this child an instruction or make a request to do something, how often do you **make sure** that he/she does it?	0.493	0.107 *0.088*	N = 3733 df = 9 χ^2 = 209.2 SRMR = 0.06 NNFI = 0.89 CFI = 0.93 H = 0.84 Not acceptable
cpa11m2. If you tell this child he/she will get **punished** if he/she doesn't stop doing something, but he/she keeps doing it, how often will you punish him/her?	0.631	0.173 *0.143*	
cpa11m3. How often does this child **get away** with things that you feel should have been punished? (reverse coded)	0.774	0.319 *0.263*	
cpa11m4. How often is this child able to **get out** of punishment when he/she really sets his/her mind to it? (reverse coded)	0.770	0.312 *0.258*	
cpa11m5. When you discipline this child, how often does he/she **ignore** the punishment? (reverse coded)	0.695	0.221 *0.182*	
cpa13m7. How often do you think that the level of punishment you give this child depends on your **mood**? (reverse coded)	0.403	0.079 *0.065*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A88: Initial model fit for W3/B-cohort/father (subsequently modified), parenting consistency

W3/B-Cohort/Father *(subsequently modified)* *Parenting consistency*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
cpa11f1. When you give this child an instruction or make a request to do something, how often do you **make sure** that he/she does it?	0.561	0.132 *0.109*	N = 2702 df = 9 χ^2 = 186.4 **SRMR = 0.07** NNFI = 0.87 CFI = 0.92 H = 0.84 Not acceptable
cpa11f2. If you tell this child he/she will get **punished** if he/she doesn't stop doing something, but he/she keeps doing it, how often will you punish him/her?	0.683	0.206 *0.170*	
cpa11f3. How often does this child **get away** with things that you feel should have been punished? (reverse coded)	0.804	0.366 *0.302*	
cpa11f4. How often is this child able to **get out** of punishment when he/she really sets his/her mind to it? (reverse coded)	0.727	0.248 *0.205*	
cpa11f5. When you discipline this child, how often does he/she **ignore** the punishment? (reverse coded)	0.651	0.182 *0.150*	
cpa13f7. How often do you think that the level of punishment you give this child depends on your **mood**? (reverse coded)	0.406	0.078 *0.064*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A89: Initial model fit for W3/K-cohort/mother (subsequently modified), parenting consistency

W3/K-Cohort/Mother *(subsequently modified)* *Parenting consistency*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
epa11m1. When you give this child an instruction or make a request to do something, how often do you **make sure** that he/she does it?	0.477	0.086 *0.073*	N = 3674 df = 9 χ^2 = 259.2 **SRMR = 0.08** NNFI = 0.88 CFI = 0.93 H = 0.86 Not acceptable
epa11m2. If you tell this child he/she will get **punished** if he/she doesn't stop doing something, but he/she keeps doing it, how often will you punish him/her?	0.639	0.150 *0.127*	
epa11m3. How often does this child **get away** with things that you feel should have been punished? (reverse coded)	0.792	0.294 *0.248*	
epa11m4. How often is this child able to **get out** of punishment when he/she really sets his/her mind to it? (reverse coded)	0.815	0.336 *0.284*	
epa11m5. When you discipline this child, how often does he/she **ignore** the punishment? (reverse coded)	0.758	0.247 *0.209*	
epa13m7. How often do you think that the level of punishment you give this child depends on your **mood**? (reverse coded)	0.422	0.071 *0.060*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A90: Initial model fit for W3/K-cohort/father (subsequently modified), parenting consistency

W3/K-Cohort/Father *(subsequently modified)* *Parenting consistency*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
epa11f1. When you give this child an instruction or make a request to do something, how often do you **make sure** that he/she does it?	0.475	0.102 *0.084*	N = 2666 df = 9 χ^2 = 216.7 **SRMR = 0.08** NNFI = 0.83 CFI = 0.89 H = 0.83 Not acceptable
epa11f2. If you tell this child he/she will get **punished** if he/she doesn't stop doing something, but he/she keeps doing it, how often will you punish him/her?	0.592	0.151 *0.125*	
epa11f3. How often does this child **get away** with things that you feel should have been punished? (reverse coded)	0.782	0.335 *0.277*	
epa11f4. How often is this child able to **get out** of punishment when he/she really sets his/her mind to it? (reverse coded)	0.759	0.298 *0.246*	
epa11f5. When you discipline this child, how often does he/she **ignore** the punishment? (reverse coded)	0.716	0.244 *0.202*	
epa13f7. How often do you think that the level of punishment you give this child depends on your **mood**? (reverse coded)	0.403	0.080 *0.066*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A91: Initial model fit for W4/B-cohort/mother (subsequently modified), parenting consistency

W4/B-Cohort/Mother *(subsequently modified)* *Parenting consistency*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
dpa11m1. When you give this child an instruction or make a request to do something, how often do you **make sure** that he/she does it?	0.548	0.118 *0.098*	N = 4202 df = 9 χ^2 = 228.9 **SRMR = 0.06** NNFI = 0.90 CFI = 0.94 H = 0.85 Not acceptable
dpa11m2. If you tell this child he/she will get **punished** if he/she doesn't stop doing something, but he/she keeps doing it, how often will you punish him/her?	0.674	0.185 *0.154*	
dpa11m3. How often does this child **get away** with things that you feel should have been punished? (reverse coded)	0.821	0.379 *0.316*	
dpa11m4. How often is this child able to **get out** of punishment when he/she really sets his/her mind to it? (reverse coded)	0.742	0.247 *0.206*	
dpa11m5. When you discipline this child, how often does he/she **ignore** the punishment? (reverse coded)	0.688	0.196 *0.163*	
dpa13m7. How often do you think that the level of punishment you give this child depends on your **mood**? (reverse coded)	0.413	0.075 *0.063*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A92: Initial model fit for W4/B-cohort/father (subsequently modified), parenting consistency

W4/B-Cohort/Father *(subsequently modified)* *Parenting consistency*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
dpa11f1. When you give this child an instruction or make a request to do something, how often do you **make sure** that he/she does it?	0.557	0.128 *0.106*	N = 2700 df = 9 χ^2 = 207.3 **SRMR = 0.08** NNFI = 0.85 CFI = 0.91 H = 0.84 Not acceptable
dpa11f2. If you tell this child he/she will get **punished** if he/she doesn't stop doing something, but he/she keeps doing it, how often will you punish him/her?	0.659	0.185 *0.153*	
dpa11f3. How often does this child **get away** with things that you feel should have been punished? (reverse coded)	0.801	0.355 *0.294*	
dpa11f4. How often is this child able to **get out** of punishment when he/she really sets his/her mind to it? (reverse coded)	0.734	0.253 *0.209*	
dpa11f5. When you discipline this child, how often does he/she **ignore** the punishment? (reverse coded)	0.698	0.216 *0.179*	
dpa13f7. How often do you think that the level of punishment you give this child depends on your **mood**? (reverse coded)	0.383	0.071 *0.059*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A93: Initial model fit for W4/K-cohort/mother (subsequently modified), parenting consistency

W4/K-Cohort/Mother *(subsequently modified)* *Parenting consistency*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
fpa11m1. When you give this child an instruction or make a request to do something, how often do you **make sure** that he/she does it?	0.496	0.087 *0.074*	N = 4011 df = 9 χ^2 = 276.9 **SRMR = 0.08** NNFI = 0.89 CFI = 0.93 H = 0.87 Not acceptable
fpa11m2. If you tell this child he/she will get **punished** if he/she doesn't stop doing something, but he/she keeps doing it, how often will you punish him/her?	0.642	0.145 *0.123*	
fpa11m3. How often does this child **get away** with things that you feel should have been punished? (reverse coded)	0.825	0.343 *0.290*	
fpa11m4. How often is this child able to **get out** of punishment when he/she really sets his/her mind to it? (reverse coded)	0.798	0.292 *0.247*	
fpa11m5. When you discipline this child, how often does he/she **ignore** the punishment? (reverse coded)	0.757	0.235 *0.199*	
fpa13m7. How often do you think that the level of punishment you give this child depends on your **mood**? (reverse coded)	0.471	0.080 *0.068*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A94: Initial model fit for W4/K-cohort/father (subsequently modified), parenting consistency

W4/K-Cohort/Father *(subsequently modified)* *Parenting consistency*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
fpa11f1. When you give this child an instruction or make a request to do something, how often do you **make sure** that he/she does it?	0.472	0.093 *0.077*	N = 2699 df = 9 χ^2 = 249.8 **SRMR = 0.09** NNFI = 0.85 CFI = 0.91 H = 0.85 Not acceptable
fpa11f2. If you tell this child he/she will get **punished** if he/she doesn't stop doing something, but he/she keeps doing it, how often will you punish him/her?	0.588	0.138 *0.115*	
fpa11f3. How often does this child **get away** with things that you feel should have been punished? (reverse coded)	0.789	0.321 *0.267*	
fpa11f4. How often is this child able to **get out** of punishment when he/she really sets his/her mind to it? (reverse coded)	0.785	0.314 *0.261*	
fpa11f5. When you discipline this child, how often does he/she **ignore** the punishment? (reverse coded)	0.737	0.247 *0.206*	
fpa13f7. How often do you think that the level of punishment you give this child depends on your **mood**? (reverse coded)	0.454	0.088 *0.073*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A95: Initial model fit for W2/B-cohort/mother (subsequently modified), parenting efficacy

W2/B-Cohort/Mother *(subsequently modified)* *Parenting efficacy*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
bpa12m1r. Does this child **behave** in a manner different from the way you want him/her to? (reverse scored)	0.652	0.151 *0.137*	N = 3488 χ^2 = 121.4 df = 2
bpa12m2r. Do you think that this child's behaviour is more than you can **handle**? (reverse scored)	0.797	0.290 *0.264*	
bpa12m3. Do you feel that you are good at getting this child to **do** what you want him/her to do?	0.811	0.315 *0.287*	**SRMR = 0.08** NNFI = 0.90 **CFI = 0.97**
bpa12m4. Do you feel that you are in control and **on top** of things when you are caring for this child?	0.825	0.343 *0.312*	H = 0.87 Acceptable

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A96: Initial model fit for W2/B-cohort/father (subsequently modified), parenting efficacy

W2/B-Cohort/Father *(subsequently modified)* *Parenting efficacy*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
bpa12f1r. Does this child **behave** in a manner different from the way you want him/her to? (reverse scored)	0.606	0.149 *0.135*	N = 3090 df = 2 χ^2 = 157.8
bpa12f2r. Do you think that this child's behaviour is more than you can **handle**? (reverse scored)	0.736	0.250 *0.226*	**SRMR = 0.09**
bpa12f3. Do you feel that you are good at getting this child to **do** what you want him/her to do?	0.818	0.386 *0.349*	NNFI = 0.83 CFI = 0.94
bpa12f4. Do you feel that you are in control and **on top** of things when you are caring for this child?	0.787	0.322 *0.291*	H = 0.84 Not acceptable

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A97: Initial model fit for W2/K-cohort/mother (subsequently modified), parenting efficacy

W2/K-Cohort/Mother *(subsequently modified)* *Parenting efficacy*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
dpa12m1r. Does this child **behave** in a manner different from the way you want him/her to? (reverse scored)	0.772	0.182 *0.169*	N = 3404 df = 2 χ^2 = 172.7 SRMR = 0.11 NNFI = 0.90 **CFI = 0.97** H = 0.90 Not acceptable
dpa12m2r. Do you think that this child's behaviour is more than you can **handle**? (reverse scored)	0.868	0.336 *0.312*	
dpa12m3. Do you feel that you are good at getting this child to **do** what you want him/her to do?	0.835	0.262 *0.243*	
dpa12m4. Do you feel that you are in control and **on top** of things when you are caring for this child?	0.852	0.297 *0.276*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A98: Initial model fit for W2/K-cohort/father (subsequently modified), parenting efficacy

W2/K-Cohort/Father *(subsequently modified)* *Parenting efficacy*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
dpa12f1r. Does this child **behave** in a manner different from the way you want him/her to? (reverse scored)	0.679	0.145 *0.133*	N = 2918 df = 2 χ^2 = 134.8 **SRMR = 0.09** NNFI = 0.89 **CFI = 0.97** H = 0.88 Acceptable
dpa12f2r. Do you think that this child's behaviour is more than you can **handle**? (reverse scored)	0.818	0.286 *0.263*	
dpa12f3. Do you feel that you are good at getting this child to **do** what you want him/her to do?	0.805	0.264 *0.243*	
dpa12f4. Do you feel that you are in control and **on top** of things when you are caring for this child?	0.864	0.392 *0.361*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A99: Initial model fit for W3/B-cohort/mother (subsequently modified), parenting efficacy

W3/B-Cohort/Mother *(subsequently modified)* *Parenting efficacy*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
cpa12m1r. Does this child **behave** in a manner different from the way you want him/her to? (reverse scored)	0.714	0.185 *0.169*	N = 3785 df = 2 χ^2 = 162.7 **SRMR = 0.09** NNFI = 0.88 **CFI = 0.96** H = 0.87 Acceptable
cpa12m2r. Do you think that this child's behaviour is more than you can **handle**? (reverse scored)	0.825	0.328 *0.300*	
cpa12m3. Do you feel that you are good at getting this child to **do** what you want him/her to do?	0.773	0.243 *0.222*	
cpa12m4. Do you feel that you are in control and **on top** of things when you are caring for this child?	0.830	0.340 *0.310*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A100: Initial model fit for W3/B-cohort/father (subsequently modified), parenting efficacy

W3/B-Cohort/Father *(subsequently modified)* *Parenting efficacy*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
cpa12f1r. Does this child **behave** in a manner different from the way you want him/her to? (reverse scored)	0.656	0.151 *0.138*	N = 2755 df = 2 χ^2 = 144.7 SRMR = 0.11 NNFI = 0.83 CFI = 0.94 H = 0.87 Not acceptable
cpa12f2r. Do you think that this child's behaviour is more than you can **handle**? (reverse scored)	0.837	0.367 *0.334*	
cpa12f3. Do you feel that you are good at getting this child to **do** what you want him/her to do?	0.764	0.241 *0.220*	
cpa12f4. Do you feel that you are in control and **on top** of things when you are caring for this child?	0.824	0.338 *0.308*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A101: Initial model fit for W3/K-cohort/mother (subsequently modified), parenting efficacy

W3/K-Cohort/Mother *(subsequently modified)* *Parenting efficacy*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
epa12m1r. Does this child **behave** in a manner different from the way you want him/her to? (reverse scored)	0.759	0.194 *0.179*	N = 3707 df = 2 χ^2 = 139.6 **SRMR = 0.08** NNFI = 0.90 **CFI = 0.97** H = 0.89 Acceptable
epa12m2r. Do you think that this child's behaviour is more than you can **handle**? (reverse scored)	0.871	0.391 *0.360*	
epa12m3. Do you feel that you are good at getting this child to **do** what you want him/her to do?	0.795	0.233 *0.215*	
epa12m4. Do you feel that you are in control and **on top** of things when you are caring for this child?	0.818	0.267 *0.246*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A102: Initial model fit for W3/K-cohort/father (subsequently modified), parenting efficacy

W3/K-Cohort/Father *(subsequently modified)* *Parenting efficacy*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
epa12f1r. Does this child **behave** in a manner different from the way you want him/her to? (reverse scored)	0.691	0.158 *0.145*	N = 2709 df = 2 χ^2 = 97.3 **SRMR = 0.06** NNFI = 0.90 **CFI = 0.97** H = 0.88 Acceptable
epa12f2r. Do you think that this child's behaviour is more than you can **handle**? (reverse scored)	0.809	0.280 *0.256*	
epa12f3. Do you feel that you are good at getting this child to **do** what you want him/her to do?	0.820	0.300 *0.275*	
epa12f4. Do you feel that you are in control and **on top** of things when you are caring for this child?	0.845	0.354 *0.324*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A103: Initial model fit for W4/B-cohort/mother (subsequently modified), parenting efficacy

W4/B-Cohort/Mother *(subsequently modified)* *Parenting efficacy*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
dpa12m1r. Does this child **behave** in a manner different from the way you want him/her to? (reverse scored)	0.761	0.178 *0.165*	N = 4149 df = 2 χ^2 = 244.1 SRMR = 0.13 NNFI = 0.89 **CFI = 0.96** H = 0.90 Not acceptable
dpa12m2r. Do you think that this child's behaviour is more than you can **handle**? (reverse scored)	0.880	0.384 *0.356*	
dpa12m3. Do you feel that you are good at getting this child to **do** what you want him/her to do?	0.811	0.233 *0.216*	
dpa12m4. Do you feel that you are in control and **on top** of things when you are caring for this child?	0.841	0.284 *0.263*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A104: Initial model fit for W4/B-cohort/father (subsequently modified), parenting efficacy

W4/B-Cohort/Father *(subsequently modified)* *Parenting efficacy*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
dpa12f1r. Does this child **behave** in a manner different from the way you want him/her to? (reverse scored)	0.615	0.105 *0.097*	N = 2715 df = 2 χ^2 = 115.1 **SRMR = 0.08** NNFI = 0.90 **CFI = 0.97** H = 0.89 Acceptable
dpa12f2r. Do you think that this child's behaviour is more than you can **handle**? (reverse scored)	0.846	0.316 *0.292*	
dpa12f3. Do you feel that you are good at getting this child to **do** what you want him/her to do?	0.854	0.336 *0.311*	
dpa12f4. Do you feel that you are in control and **on top** of things when you are caring for this child?	0.849	0.324 *0.300*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A105: Initial model fit for W4/K-cohort/mother (subsequently modified), parenting efficacy

W4/K-Cohort/Mother *(subsequently modified)* *Parenting efficacy*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
fpa12m1r. Does this child **behave** in a manner different from the way you want him/her to? (reverse scored)	0.790	0.203 *0.188*	N = 4020 df = 2 χ^2 = 308.9 SRMR = 0.13 NNFI = 0.85 CFI = 0.95 H = 0.90 Not acceptable
fpa12m2r. Do you think that this child's behaviour is more than you can **handle**? (reverse scored)	0.885	0.394 *0.365*	
fpa12m3. Do you feel that you are good at getting this child to **do** what you want him/her to do?	0.789	0.202 *0.187*	
fpa12m4. Do you feel that you are in control and **on top** of things when you are caring for this child?	0.842	0.279 *0.259*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Table A106: Initial model fit for W4/K-cohort/father (subsequently modified), parenting efficacy

W4/K-Cohort/Father *(subsequently modified)* *Parenting efficacy*	Item loadings[a] λ_x	Regression weights[b]	Model characteristics[c]
fpa12f1r. Does this child **behave** in a manner different from the way you want him/her to? (reverse scored)	0.750	0.179 *0.165*	N = 2724 df = 2 χ^2 = 122.0 **SRMR = 0.09** NNFI = 0.90 **CFI = 0.97** H = 0.90 Acceptable
fpa12f2r. Do you think that this child's behaviour is more than you can **handle**? (reverse scored)	0.844	0.306 *0.282*	
fpa12f3. Do you feel that you are good at getting this child to **do** what you want him/her to do?	0.809	0.245 *0.226*	
fpa12f4. Do you feel that you are in control and **on top** of things when you are caring for this child?	0.863	0.354 *0.327*	

a Partial regression coefficients of the item on the underlying construct.
b Upper figures are raw factor score indices and lower figures (in italics) are proportionally adjusted factor score regression indices.
c Models were fitted via Weighted Least Squares using polychoric correlations and their asymptotic covariance matrix via LISREL 8.7 (SS Inc., 2007).

Appendix D: Correlations across waves

Table A107: Correlations between parental warmth across waves: B cohort

	W2	W3	W4
W1 mothers	0.440	0.426	0.344
W1 fathers	0.494	0.425	0.370
W2 mothers		0.525	0.443
W2 fathers		0.575	0.523
W3 mothers			0.558
W3 fathers			0.624

N mothers = 3380; N fathers = 1794

Table A108: Correlations between parental warmth across waves: K cohort

	W2	W3	W4
W1 mothers	0.557	0.522	0.493
W1 fathers	0.597	0.549	0.536
W2 mothers		0.591	0.567
W2 fathers		0.635	0.597
W3 mothers			0.654
W3 fathers			0.676

N mothers = 3227; N fathers = 1781

Table A109: Correlations between parental hostility across waves: B cohort

	W2	W3
W1 mothers	0.335	0.281
W1 fathers	0.356	0.292
W2 mothers		0.542
W2 fathers		0.518

N mothers =3059; N fathers = 2164

Table A110: Correlations between parental anger across waves: B cohort	
	W4
W3 mothers	0.570
W3 fathers	0.531

N mothers =3526; N fathers = 2128

Table A111: Correlations between parental anger across waves: K cohort		
	W3	**W4**
W2 mothers	0.579	0.519
W2 fathers	0.566	0.513
W3 mothers		0.612
W3 fathers		0.597

N mothers =3243; N fathers = 1900

Table A112: Correlations between parental consistency across waves: B cohort	
	W4
W3 mothers	0.606
W3 fathers	0.546

N mothers =3511; N fathers = 2131

Table A113: Correlations between parental consistency across waves: K cohort			
	W2	**W3**	**W4**
W1 mothers	0.553	0.524	0.495
W1 fathers	0.554	0.478	0.445
W2 mothers		0.579	0.551
W2 fathers		0.557	0.507
W3 mothers			0.626
W3 fathers			0.607

N mothers = 3195; N fathers = 1706

Table A114: Correlations between inductive reasoning across waves: B cohort	
	W4
W3 mothers	0.457
W3 fathers	0.493

N mothers =3535; N fathers = 2145

Table A115: Correlations between inductive reasoning across waves: K cohort	
	W4
W3 mothers	0.492
W3 fathers	0.527

N mothers =3448; N fathers = 2182

Table A116: Correlations between parenting efficacy across waves: B cohort		
	W3	**W4**
W2 mothers	0.494	0.372
W2 fathers	0.367	0.362
W3 mothers		0.438
W3 fathers		0.402

N mothers = 2927; N fathers = 1941

Table A117: Correlations between parenting efficacy across waves: K cohort		
	W3	**W4**
W2 mothers	0.486	0.371
W2 fathers	0.487	0.426
W3 mothers		0.455
W3 fathers		0.479

N mothers = 2872; N fathers = 1919

Appendix E: SPSS syntax for creating final, recommended composite measures

Cohort	Construct	Wave	Source	Syntax
B	Warmth	1	Mother	*W1/B-cohort/Mother/warmth MISSING VALUES apa03m1, apa03m2, apa03m3, apa03m4, apa03m5, apa03m6 (lowest to –2). COMPUTE W1BMwarm=(apa03m1*0.232)+(apa03m2*0.179)+ (apa03m3*0.104)+(apa03m4*0.222)+(apa03m5* 0.148)+(apa03m6* 0.114). VARIABLE LABELS W1BMwarm 'W1 B Parenting warmth mothers—error adjusted'.
B	Warmth	1	Father	*W1/B-cohort/Father/warmth MISSING VALUES apa03f1, apa03f2, apa03f3, apa03f4, apa03f5, apa03f6 (lowest to –2). COMPUTE W1BFwarm =(apa03f1*0.235)+(apa03f2*0.229)+(apa03f3*0.094)+(apa03f4* 0.188)+(apa03f5* 0.138)+(apa03f6* 0.116). VARIABLE LABELS W1BFwarm 'W1 B Parenting warmth fathers—error adjusted'.
B	Warmth	2	Mother	*W2/B-cohort/Mother/warmth MISSING VALUES bpa03m1, bpa03m2, bpa03m3, bpa03m4, bpa03m5, bpa03m6 (lowest to –2). COMPUTE W2BMwarm =(bpa03m1*0.272)+(bpa03m2*0.083)+(bpa03m3*0.081)+(bpa03m4* 0.231)+(bpa03m5* 0.202)+(bpa03m6* 0.131). VARIABLE LABELS W2BMwarm 'W2 B Parenting warmth mothers—error adjusted'.
B	Warmth	2	Father	*W2/B-cohort/Father/warmth MISSING VALUES bpa03f1, bpa03f2, bpa03f3, bpa03f4, bpa03f5, bpa03f6 (lowest to –2). COMPUTE W2BFwarm =(bpa03f1*0.302)+(bpa03f2*0.112)+(bpa03f3*0.066)+(bpa03f4* 0.215)+(bpa03f5* 0.140)+(bpa03f6* 0.165). VARIABLE LABELS W2BFwarm 'W2 B Parenting warmth fathers—error adjusted'.
B	Warmth	3	Mother	*W3/B-cohort/Mother/warmth MISSING VALUES cpa03m1, cpa03m2, cpa03m3, cpa03m4, cpa03m5, cpa03m6 (lowest to –2). COMPUTE W3BMwarm =(cpa03m1*0.348)+(cpa03m2*0.111)+(cpa03m3*0.097)+(cpa03m4* 0.233)+(cpa03m5* 0.106)+(cpa03m6* 0.104). VARIABLE LABELS W3BMwarm 'W3 B Parenting warmth mothers—error adjusted'.
B	Warmth	3	Father	*W3/B-cohort/Father/warmth MISSING VALUES cpa03f1, cpa03f2, cpa03f3, cpa03f4, cpa03f5, cpa03f6 (lowest to –2). COMPUTE W3BFwarm =(cpa03f1*0.272)+(cpa03f2*0.135)+(cpa03f3*0.079)+(cpa03f4* 0.232)+(cpa03f5* 0.127)+(cpa03f6* 0.154). VARIABLE LABELS W3BFwarm 'W3 B Parenting warmth fathers—error adjusted'.

Cohort	Construct	Wave	Source	Syntax
B	Warmth	4	Mother	*W4/B-cohort/Mother/warmth MISSING VALUES dpa03m1, dpa03m2, dpa03m3, dpa03m4, dpa03m5, dpa03m6 (lowest to –2). COMPUTE W4BMwarm =(dpa03m1*0.302)+(dpa03m2*0.132)+(dpa03m3*0.088)+(dpa03m4* 0.187)+(dpa03m5* 0.158)+(dpa03m6 * 0.133). VARIABLE LABELS W4BMwarm 'W4 B Parenting warmth mothers—error adjusted'.
B	Warmth	4	Father	*W4/B-cohort/Father/warmth MISSING VALUES dpa03f1, dpa03f2, dpa03f3, dpa03f4, dpa03f5, dpa03f6 (lowest to –2). COMPUTE W4BFwarm =(dpa03f1*0.321)+(dpa03f2*0.159)+(dpa03f3*0.077)+(dpa03f4* 0.191)+(dpa03f5* 0.121)+(dpa03f6* 0.131). VARIABLE LABELS W4BFwarm 'W4 B Parenting warmth fathers—error adjusted'.
B	Hostility	1	Mother	*W1/B-cohort/Mother/hostility MISSING VALUES apa04m1, apa04m2, apa04m3, apa04m4, apa04m5 (lowest to –2). COMPUTE W1BMhost =(apa04m1*0.242)+(apa04m2*0.203)+(apa04m3*0.149)+(apa04m4* 0.327)+(apa04m5* 0.078). VARIABLE LABELS W1BMhost 'W1 B Parenting hostility mothers—error adjusted'.
B	Hostility	1	Father	*W1/B-cohort/Father/hostility MISSING VALUES apa04f1, apa04f2, apa04f3, apa04f4, apa04f5 (lowest to –2). COMPUTE W1BFhost =(apa04f1*0.325)+(apa04f2*0.188)+(apa04f3*0.122)+(apa04f4* 0.299)+(apa04f5* 0.067). VARIABLE LABELS W1BFhost 'W1 B Parenting hostility fathers—error adjusted'.
B	Hostility	2	Mother	*W2/B-cohort/Mother/hostility MISSING VALUES bpa04m1, bpa04m2, bpa04m3, bpa04m4, bpa04m5 (lowest to –2). COMPUTE W2BMhost =(bpa04m1*0.209)+(bpa04m2*0.187)+(bpa04m3*0.216)+(bpa04m4* 0.284)+(bpa04m5* 0.104). VARIABLE LABELS W2BMhost 'W2 B Parenting hostility mothers—error adjusted'.
B	Hostility	2	Father	*W2/B-cohort/Father/hostility MISSING VALUES bpa04f1, bpa04f2, bpa04f3, bpa04f4, bpa04f5 (lowest to –2). COMPUTE W2BFhost =(bpa04f1*0.239)+(bpa04f2*0.269)+(bpa04f3*0.084)+(bpa04f4* 0.362)+(bpa04f5* 0.046). VARIABLE LABELS W2BFhost 'W2 B Parenting hostility fathers—error adjusted'.

Cohort	Construct	Wave	Source	Syntax
B	Hostility	3	Mother	*W3/B-cohort/Mother/hostility MISSING VALUES cpa04m1, cpa04m2, cpa04m3, cpa04m4 (lowest to –2). COMPUTE W3BMhost =(cpa04m1*0.225)+(cpa04m2*0.241)+(cpa04m3*0.145)+(cpa04m4* 0.389). VARIABLE LABELS W3BMhost 'W3 B Parenting hostility mothers—error adjusted'.
B	Hostility	3	Father	*p 25 W3/B-cohort/Father/hostility MISSING VALUES cpa04f1, cpa04f2, cpa04f3, cpa04f4 (lowest to –2). COMPUTE W3BFhost =(cpa04f1*0.227)+(cpa04f2*0.150)+(cpa04f3*0.144)+(cpa04f4* 0.479). VARIABLE LABELS W3BFhost 'W3 B Parenting hostility fathers—error adjusted'.
B	Anger	3	Mother	*W3/B-cohort/Mother/anger MISSING VALUES cpa13m3, cpa13m4, cpa13m5, cpa13m2, cpa13m6, cpa13m7 (lowest to –2). COMPUTE W3BManger = (cpa13m3*0.208)+(cpa13m4*0.206)+(cpa13m5*0.407) + (cpa13m6*0.179). VARIABLE LABELS W3BManger 'W3 B Parenting anger mothers—error adjusted'.
B	Anger	3	Father	*W3/B-cohort/Father/anger MISSING VALUES cpa13f3, cpa13f4, cpa13f5, cpa13f2, cpa13f6, cpa13f7 (lowest to –2). COMPUTE W3BFanger =(cpa13f3*0.196)+(cpa13f4*0.188)+(cpa13f5*0.398) +(cpa13f6*0.218). VARIABLE LABELS W3BFanger 'W3 B Parenting anger father—error adjusted'.
B	Anger	4	Mother	*W4/B-cohort/Mother/anger MISSING VALUES dpa13m3, dpa13m4, dpa13m5, dpa13m2, dpa13m6, dpa13m7 (lowest to –2). COMPUTE W4BManger = (dpa13m3*0.249)+(dpa13m4*0.149)+(dpa13m5*0.391) +(dpa13m6*0.211). VARIABLE LABELS W4BManger 'W4 B Parenting anger mothers—error adjusted'.
B	Anger	4	Father	*W4/B-cohort/Father/anger MISSING VALUES dpa13f3, dpa13f4, dpa13f5, dpa13f2, dpa13f6, dpa13f7 (lowest to –2). COMPUTE W4BFanger = (dpa13f3*0.202)+(dpa13f4*0.187)+(dpa13f5*0.411) +(dpa13f6*0.199). VARIABLE LABELS W4BFanger 'W4 B Parenting anger father—error adjusted'.
B	Consistency	3	Mother	*W3/B-cohort/Mother/consistency MISSING VALUES cpa11m1, cpa11m2, cpa11m3, cpa11m4, cpa11m5, cpa13m7 (lowest to –2). COMPUTE W3BMcons = (cpa11m2*0.111)+(cpa11m3*0.302)+(cpa11m4 *0.298) +(cpa11m5 *0.213)+(cpa13m7*0.076). VARIABLE LABELS W3BMcons 'W3 B Parenting consistency mother—error adjusted'.
B	Consistency	3	Father	*W3/B-cohort/Father/consistency MISSING VALUES cpa11f1, cpa11f2, cpa11f3, cpa11f4, cpa11f5, cpa13f7 (lowest to –2). COMPUTE W3BFcons = (cpa11f2*0.121)+(cpa11f3*0.365)+(cpa11f4*0.254) +(cpa11f5 *0.181)+(cpa17f7*0.080). VARIABLE LABELS W3BFcons 'W3 B Parenting consistency father—error adjusted'.

Cohort	Construct	Wave	Source	Syntax
B	Consistency	4	Mother	*W4/B-cohort/Mother/consistency MISSING VALUES dpa11m1, dpa11m2, dpa11m3, dpa11m4, dpa11m5, dpa13m7 (lowest to –2). COMPUTE W4BMcons = (dpa11m2*0.117)+(dpa11m3*0.367)+(dpa11m4*0.247) +(dpa11m5 *0.198)+(dpa13m7*.071). VARIABLE LABELS W4BMcons 'W4 B Parenting consistency mother—error adjusted'.
B	Consistency	4	Father	*W4/B-cohort/Father/consistency MISSING VALUES dpa11f1, dpa11f2, dpa11f3, dpa11f4, dpa11f5, dpa13f7 (lowest to –2). COMPUTE W4BFcons = (dpa11f2*0.108)+(dpa11f3*0.343)+(dpa11f4*0.258) +(dpa11f5 *0.213)+(dpa13f7*0.078). VARIABLE LABELS W4BFcons 'W4 B Parenting consistency father—error adjusted'.
B	Separation anxiety	1	Mother	* W1/B-cohort/Mother/separation anxiety MISSING VALUES apa05br, apa05cr, apa05dr, apa05er, apa05fr, apa05gr (lowest to –2). COMPUTE W1BMsep = (apa05br *0.079)+(apa05cr *0.215)+(apa05dr *0.150) +(apa05er *0.267) +(apa05fr *0.162) +(apa05gr *0.127). VARIABLE LABELS W1BMsep 'W1 B separation anxiety mother—error adjusted'.
B	Inductive reasoning	3	Mother	*W3/B-cohort/Mother/inductive reasoning MISSING VALUES cpa09m2, cpa09m1, cpa09m3, cpa09m4, cpa09m5 (lowest to –2). COMPUTE W3BMind = (cpa09m2*0.092)+(cpa09m1*0.283)+(cpa09m3*0.266)+(cpa09m4*0.173)+(cpa09m5*0.186). VARIABLE LABELS W3BMind 'W3 B Parenting inductive reasoning mother—error adjusted'.
B	Inductive reasoning	3	Father	*W3/B-cohort/Father/inductive reasoning MISSING VALUES cpa09f2, cpa09f1, cpa09f3, cpa09f4, cpa09f5 (lowest to –2). COMPUTE W3BFind = (cpa09f2*0.082)+(cpa09f1*0.290)+(cpa09f3*0.227)+(cpa09f4*0.236)+(cpa09f5*0.164). VARIABLE LABELS W3BFind 'W3 B Parenting inductive reasoning father—error adjusted'.
B	Inductive reasoning	4	Mother	* W4/B-cohort/Mother/inductive reasoning MISSING VALUES dpa09m1, dpa09m2, dpa09m3, dpa09m4, dpa09m5 (lowest to –2). COMPUTE W4BMind =(dpa09m1*0.312)+(dpa09m2*0.079)+(dpa09m3*0.233)+(dpa09m4*0.200) +(dpa09m5*0.176). VARIABLE LABELS W4BMind 'W4 B Parenting inductive reasoning mother—error adjusted'.
B	Inductive reasoning	4	Father	*W4/B-cohort/Father/inductive reasoning MISSING VALUES dpa09f1, dpa09f2, dpa09f3, dpa09f4, dpa09f5 (lowest to –2). COMPUTE W4BFind = (dpa09f1*0.200)+(dpa09f2*0.064)+(dpa09f3*0.182)+ (dpa09f4*0.289)+(dpa09f5*0.265). VARIABLE LABELS W4BFind 'W4 B Parenting inductive reasoning father—error adjusted'.

Cohort	Construct	Wave	Source	Syntax
B	Parenting self-efficacy	2	Mother	*W2/B-cohort/Mother/efficacy MISSING VALUES bpa12m1r, bpa12m2r, bpa12m3, bpa12m4 (lowest to –2). COMPUTE W2BMeff = (bpa12m1r*0.028)+(bpa12m2r*0.144)+(bpa12m3*0.385)+(bpa12m4*0.443). VARIABLE LABELS W2BMeff 'W2 B Parenting efficacy mother—error adjusted'.
B	Parenting self-efficacy	2	Father	*W2/B-cohort/Father/efficacy MISSING VALUES bpa12f1r, bpa12f2r, bpa12f3, bpa12f4 (lowest to –2). COMPUTE W2BFeff =(bpa12f1r*0.031)+(bpa12f2r*0.117)+(bpa12f3*0.465)+(bpa12f4*0.386). VARIABLE LABELS W2BFeff 'W2 B Parenting efficacy father—error adjusted'.
B	Parenting self-efficacy	3	Mother	*W3/B-cohort/Mother/efficacy MISSING VALUES cpa12m1r, cpa12m2r, cpa12m3, cpa12m4 (lowest to –2). COMPUTE W3BMeff = (cpa12m1r*0.025)+(cpa12m2r*0.153)+(cpa12m3*0.327)+(cpa12m4*0.495). VARIABLE LABELS W3BMeff 'W3 B Parenting efficacy mother—error adjusted'.
B	Parenting self-efficacy	3	Father	*W3/B-cohort/Father/efficacy MISSING VALUES cpa12f1r, cpa12f2r, cpa12f3, cpa12f4 (lowest to –2). COMPUTE W3BFeff =(cpa12f1r*0.000)+(cpa12f2r*0.152)+(cpa12f3*0.298)+(cpa12f4*0.551). VARIABLE LABELS W3BFeff 'W3 B Parenting efficacy father—error adjusted'.
B	Parenting self-efficacy	4	Mother	*W4/B-cohort/Mother/efficacy MISSING VALUES dpa12m1r, dpa12m2r, dpa12m3, dpa12m4 (lowest to –2). COMPUTE W4BMeff = (dpa12m2r*0.130)+ (dpa12m3*0.390)+(dpa12m4*0.481). VARIABLE LABELS W4BMeff 'W4 B Parenting efficacy mother—error adjusted'. [Note: the proportional weighting for 'behave' is so low (dpa12m1r =-0.001) that this item can be excluded from computation of the composite score]
B	Parenting self-efficacy	4	Father	*W4/B-cohort/Father/efficacy MISSING VALUES dpa12f1r, dpa12f2r, dpa12f3, dpa12f4 (lowest to –2). COMPUTE W4BFeff =(dpa12f1r*0.018)+(dpa12f2r*0.154)+(dpa12f3*0.419)+(dpa12f4*0.409). VARIABLE LABELS W4BFeff 'W4 B Parenting efficacy father—error adjusted'.
K	Warmth	1	Mother	*W1/K-cohort/Mother/warmth MISSING VALUES cpa03m1, cpa03m2, cpa03m3, cpa03m4, cpa03m5, cpa03m6 (lowest to –2). COMPUTE W1BMwarm =(cpa03m1*0.276)+(cpa03m2*0.200)+(cpa03m3*0.108)+(cpa03m4* 0.165)+(cpa03m5* 0.123)+(cpa03m6* 0.128). VARIABLE LABELS W1KMwarm 'W1 K Parenting warmth mothers—error adjusted'.

Cohort	Construct	Wave	Source	Syntax
K	Warmth	1	Father	*W1/K-cohort/Father/warmth MISSING VALUES cpa03f1, cpa03f2, cpa03f3, cpa03f4, cpa03f5, cpa03f6 (lowest to –2). COMPUTE W1KFwarm =(cpa03f1*0.212)+(cpa03f2*0.182)+(cpa03f3*0.113)+(cpa03f4* 0.212)+(cpa03f5* 0.136)+(cpa03f6* 0.145). VARIABLE LABELS W1KFwarm 'W1 K Parenting warmth fathers—error adjusted'.
K	Warmth	2	Mother	*W2/K-cohort/Mother/warmth MISSING VALUES dpa03m1, dpa03m2, dpa03m3, dpa03m4, dpa03m5, dpa03m6 (lowest to –2). COMPUTE W2KMwarm =(dpa03m1*0.340)+(dpa03m2*0.122)+(dpa03m3*0.088)+(dpa03m4* 0.200)+(dpa03m5* 0.111)+(dpa03m6* 0.138). VARIABLE LABELS W2KMwarm 'W2 K Parenting warmth mothers—error adjusted'.
K	Warmth	2	Father	*W2/K-cohort/Father/warmth MISSING VALUES dpa03f1, dpa03f2, dpa03f3, dpa03f4, dpa03f5, dpa03f6 (lowest to –2). COMPUTE W2KFwarm =(dpa03f1*0.276)+(dpa03f2*0.146)+(dpa03f3*0.086)+(dpa03f4* 0.182)+(dpa03f5* 0.149)+(dpa03f6* 0.161). VARIABLE LABELS W2KFwarm 'W2 K Parenting warmth fathers—error adjusted'.
K	Warmth	3	Mother	*W3/K-cohort/Mother/warmth MISSING VALUES epa03m1, epa03m2, epa03m3, epa03m4, epa03m5, epa03m6 (lowest to –2). COMPUTE W3KMwarm (epa03m1*0.249)+(epa03m2*0.107)+(epa03m3*0.106)+(epa03m4* 0.211)+(epa03m5* 0.164)+(epa03m6* 0.162). VARIABLE LABELS W3KMwarm 'W3 K Parenting warmth mothers—error adjusted'.
K	Warmth	3	Father	*W3/K-cohort/Father/warmth MISSING VALUES epa03f1, epa03f2, epa03f3, epa03f4, epa03f5, epa03f6 (lowest to –2). COMPUTE W3KFwarm =(epa03f1*0.324)+(epa03f2*0.145)+(epa03f3*0.111)+(epa03f4* 0.189)+(epa03f5* 0.115)+(epa03f6* 0.115). VARIABLE LABELS W3KFwarm 'W3 K Parenting warmth fathers—error adjusted'.
K	Warmth	4	Mother	*W4/K-cohort/Mother/warmth MISSING VALUES fpa03m1, fpa03m2, fpa03m3, fpa03m4, fpa03m5, fpa03m6 (lowest to –2). COMPUTE W4KMwarm =(fpa03m1*0.193)+(fpa03m2*0.142)+(fpa03m3*0.113)+(fpa03m4* 0.227)+(fpa03m5* 0.175)+(fpa03m6 * 0.150). VARIABLE LABELS W4KMwarm 'W4 K Parenting warmth mothers—error adjusted'.

Cohort	Construct	Wave	Source	Syntax
K	Warmth	4	Father	*W4/K-cohort/Father/warmth MISSING VALUES fpa03f1, fpa03f2, fpa03f3, fpa03f4, fpa03f5, fpa03f6 (lowest to –2). COMPUTE W4KFwarm =(fpa03f1*0.323)+(fpa03f2*0.159)+(fpa03f3*0.094)+(fpa03f4* 0.164)+(fpa03f5* 0.131)+(fpa03f6* 0.129). VARIABLE LABELS W4KFwarm 'W4 K Parenting warmth fathers—error adjusted'.
K	Hostility	2	Mother	* W2/K-cohort/Mother/hostility MISSING VALUES dpa04m1, dpa04m2, dpa04m3, dpa04m4 (lowest to –2). COMPUTE W2KMhost =(dpa04m1*0.347)+(dpa04m2*0.334)+(dpa04m3*0.090)+(dpa04m4* 0.228). VARIABLE LABELS W2KMhost 'W2 K Parenting hostility mothers—error adjusted'.
K	Hostility	2	Father	*p 23 W2/K-cohort/Father/hostility MISSING VALUES dpa04f1, dpa04f2, dpa04f3, dpa04f4 (lowest to –2). COMPUTE W2KFhost =(dpa04f1*0.340)+(dpa04f2*0.305)+(dpa04f3*0.100)+(dpa04f4* 0.256). VARIABLE LABELS W2KFhost 'W2 K Parenting hostility fathers—error adjusted'.
K	Anger	1	Mother	*W1/K-cohort/Mother/anger MISSING VALUES cpa13m3, cpa13m4, cpa13m5, cpa13m2 (lowest to –2). COMPUTE W1KManger =(cpa13m3*0.303)+(cpa13m4*0.208)+(cpa13m5*0.365)+(cpa13m2 * 0.124). VARIABLE LABELS W1KManger 'W3 K Parenting anger mothers—error adjusted'.
K	Anger	1	Father	*W1/K-cohort/Father/anger MISSING VALUES cpa13f3, cpa13f4, cpa13f5, cpa13f2 (lowest to –2). COMPUTE W1KFanger =(cpa13f3*0.384)+(cpa13f4*0.163)+(cpa13f5*0.222)+(cpa13f2 * 0.231). VARIABLE LABELS W1KFanger 'W3 K Parenting anger fathers—error adjusted'.
K	Anger	2	Mother	*W2/K-cohort/Mother/anger MISSING VALUES dpa13m3, dpa13m4, dpa13m5, dpa13m2, dpa13m6, dpa13m7 (lowest to –2). COMPUTE W2KManger =(dpa13m3*0.242)+(dpa13m4*0.155)+(dpa13m5*0.361) +(dpa13m6*0.242). VARIABLE LABELS W2KManger 'W2 K Parenting anger mothers—error adjusted'.
K	Anger	2	Father	*W2/K-cohort/Father/anger MISSING VALUES dpa13f3, dpa13f4, dpa13f5, dpa13f2, dpa13f6, dpa13f7 (lowest to –2). COMPUTE W2KFanger =(dpa13f3*0.206)+(dpa13f4*0.186)+(dpa13f5*0.402) +(dpa13f6*0.205). VARIABLE LABELS W2KFanger 'W2 K Parenting anger father—error adjusted'.

Cohort	Construct	Wave	Source	Syntax
K	Anger	3	Mother	*W3/K-cohort/Mother/anger MISSING VALUES epa13m3, epa13m4, epa13m5, epa13m2, epa13m6, epa13m7 (lowest to –2). COMPUTE W3KManger = (epa13m3*0.256)+(epa13m4*0.172)+(epa13m5*0.411) + (epa13m6*0.161). VARIABLE LABELS W3KManger 'W3 K Parenting anger mothers—error adjusted'.
K	Anger	3	Father	*W3/K-cohort/Father/anger MISSING VALUES epa13f3, epa13f4, epa13f5, epa13f2, epa13f6, epa13f7 (lowest to –2). COMPUTE W3KFanger =(epa13f3*0.208)+(epa13f4*0.174)+(epa13f5*0.429) +(epa13f6*0.188). VARIABLE LABELS W3KFanger 'W3 K Parenting anger father—error adjusted'.
K	Anger	4	Mother	*W4/K-cohort/Mother/anger MISSING VALUES fpa13m3, fpa13m4, fpa13m5, fpa13m2, fpa13m6, fpa13m7 (lowest to –2). COMPUTE W4KManger = (fpa13m3*0.238)+(fpa13m4*0.164)+(fpa13m5*0.417) +(fpa13m6*0.180). VARIABLE LABELS W4KManger 'W4 K Parenting anger mothers—error adjusted'.
K	Anger	4	Father	*W4/K-cohort/Father/anger MISSING VALUES fpa13f3, fpa13f4, fpa13f5, fpa13f2, fpa13f6, fpa13f7 (lowest to –2). COMPUTE W4KFanger = (fpa13f3*0.179)+(fpa13f4*0.151)+(fpa13f5*0.430) +(fpa13f6*0.240). VARIABLE LABELS W4KFanger 'W4 K Parenting anger father—error adjusted'.
K	Consistency	1	Mother	*W1/K-cohort/Mother/consistency MISSING VALUES cpa11m1, cpa11m2, cpa11m3, cpa11m4, cpa11m5 (lowest to –2). COMPUTE W1KMcons = (cpa11m2*0.105)+(cpa11m3*0.345)+(cpa11m4 *0.355) +(cpa11m5 *0.195). VARIABLE LABELS W1KMcons 'W1 K Parenting consistency mother—error adjusted'.
K	Consistency	1	Father	*W1/K-cohort/Father/consistency MISSING VALUES cpa11f1, cpa11f2, cpa11f3, cpa11f4, cpa11f5 (lowest to –2). COMPUTE W1KFcons = (cpa11f2*0.148)+(cpa11f3*0.319)+(cpa11f4*0.345) +(cpa11f5 *0.188). VARIABLE LABELS W1KFcons 'W1 K Parenting consistency father—error adjusted'.
K	Consistency	2	Mother	*W2/K-cohort/Mother/consistency MISSING VALUES dpa11m1, dpa11m2, dpa11m3, dpa11m4, dpa11m5, dpa13m7 (lowest to –2). COMPUTE W2KMcons = (dpa11m2*0.079)+(dpa11m3*0.305)+(dpa11m4 *0.319) +(dpa11m5 *0.216) + (dpa13m7*0.080). VARIABLE LABELS W2KMcons 'W2 K Parenting consistency mother—error adjusted'.

Cohort	Construct	Wave	Source	Syntax
K	Consistency	2	Father	*W2/K-cohort/Father/consistency MISSING VALUES dpa11f1, dpa11f2, dpa11f3, dpa11f4, dpa11f5, dpa13f7 (lowest to –2). COMPUTE W2KFcons = (dpa11f2*0.094)+(dpa11f3*0.282)+(dpa11f4*0.345) +(dpa11f5 *0.208) + (dpa13f7*0.072). VARIABLE LABELS W2KFcons 'W2 K Parenting consistency father—error adjusted'.
K	Consistency	3	Mother	*W3/K-cohort/Mother/consistency MISSING VALUES epa11m1, epa11m2, epa11m3, epa11m4, epa11m5, epa13m7 (lowest to –2). COMPUTE W3KMcons = (epa11m2*0.091)+(epa11m3*0.269)+(epa11m4 *0.331) +(epa11m5 *0.241)+ (epa13m7*.067) VARIABLE LABELS W3KMcons 'W3 K Parenting consistency mother—error adjusted'.
K	Consistency	3	Father	*W3/K-cohort/Father/consistency MISSING VALUES epa11f1, epa11f2, epa11f3, epa11f4, epa11f5, epa3f7 (lowest to –2). COMPUTE W3KFcons = (epa11f2*0.088)+(epa11f3*0.311)+(epa11f4*0.279) +(epa11f5 *0.245)+(epa13f7*.077). VARIABLE LABELS W3KFcons 'W3 K Parenting consistency father—error adjusted'.
K	Consistency	4	Mother	*W4/K-cohort/Mother/consistency MISSING VALUES fpa11m1, fpa11m2, fpa11m3, fpa11m4, fpa11m5, fpa13m7 (lowest to –2). COMPUTE W4KMcons = (fpa11m2*0.088)+(fpa11m3*0.315)+(fpa11m4*0.289) +(fpa11m5 *0.230)+(fpa13m7*0.078). VARIABLE LABELS W4KMcons 'W4 K Parenting consistency mother—error adjusted'.
K	Consistency	4	Father	*W4/K-cohort/Father/consistency MISSING VALUES fpa11f1, fpa11f2, fpa11f3, fpa11f4, fpa11f5, fpa13f7 (lowest to –2). COMPUTE W4KFcons = (fpa11f2*0.075)+(fpa11f3*0.291)+(fpa11f4*0.304) +(fpa11f5 *0.242)+(fpa13f7*.088). VARIABLE LABELS W4KFcons 'W4 K Parenting consistency father—error adjusted'.
K	Inductive reasoning	3	Mother	*W3/K-cohort/Mother/inductive reasoning MISSING VALUES epa09m2, epa09m1, epa09m3, epa09m4, epa09m5 (lowest to –2). COMPUTE W3KMind = (epa09m2*0.077)+(epa09m1*0.300)+(epa09m3*0.248)+(epa09m4*0.197)+(epa09m5*0.178). VARIABLE LABELS W3KMind 'W3 K Parenting inductive reasoning mother—error adjusted'.
K	Inductive reasoning	3	Father	*W3/K-cohort/Father/inductive reasoning MISSING VALUES epa09f2, epa09f1, epa09f3, epa09f4, epa09f5 (lowest to –2). COMPUTE W3KFind = (epa09f2*0.059)+(epa09f1*0.165)+(epa09f3*0.178)+(epa09f4*0.332)+(epa09f5*0.266). VARIABLE LABELS W3KFind 'W3 K Parenting inductive reasoning father—error adjusted'.
K	Inductive reasoning	4	Mother	*W4/K-cohort/Mother/inductive reasoning MISSING VALUES fpa09m1, fpa09m2, fpa09m3, fpa09m4, fpa09m5 (lowest to –2). COMPUTE W4KMind =(fpa09m1*0.306)+(fpa09m2*0.078)+(fpa09m3*0.242)+(fpa09m4*0.188) + (fpa09m5*0.185). VARIABLE LABELS W4KMind 'W4 K Parenting inductive reasoning mother—error adjusted'.

Cohort	Construct	Wave	Source	Syntax
K	Inductive reasoning	4	Father	*W4/K-cohort/Father/inductive reasoning MISSING VALUES fpa09f1, fpa09f2, fpa09f3, fpa09f4, fpa09f5 (lowest to –2). COMPUTE W4KFind = (fpa09f1*0.271)+(fpa09f2*0.098)+(fpa09f3*0.208)+ (fpa09f4*0.231)+(fpa09f5*0.191). VARIABLE LABELS W4KFind 'W4 K Parenting inductive reasoning father—error adjusted'.
K	Parenting self-efficacy	2	Mother	*W2/K-cohort/Mother/efficacy MISSING VALUES dpa12m1r, dpa12m2r, dpa12m3, dpa12m4 (lowest to –2). COMPUTE W2KMeff = (dpa12m1r*0.016)+(dpa12m2r*0.123)+(dpa12m3*0.425)+(dpa12m4*0.436). VARIABLE LABELS W2KMeff 'W2 K Parenting efficacy mother—error adjusted'.
K	Parenting self-efficacy	2	Father	*W2/K-cohort/Father/efficacy MISSING VALUES dpa12f1r, dpa12f2r, dpa12f3, dpa12f4 (lowest to –2). COMPUTE W2KFeff =(dpa12f1r*0.011)+(dpa12f2r*0.144)+(dpa12f3*0.333)+(dpa12f4*0.511). VARIABLE LABELS W2KFeff 'W2 B Parenting efficacy father—error adjusted'.
K	Parenting self-efficacy	3	Mother	*W3/K-cohort/Mother/efficacy MISSING VALUES epa12m1r, epa12m2r, epa12m3, epa12m4 (lowest to –2). COMPUTE W3KMeff = (epa12m1r*0.032)+(epa12m2r*0.173)+(epa12m3*0.381)+(epa12m4*0.414). VARIABLE LABELS W3KMeff 'W3 K Parenting efficacy mother—error adjusted'.
K	Parenting self-efficacy	3	Father	*W3/K-cohort/Father/efficacy MISSING VALUES epa12f1r, epa12f2r, epa12f3, epa12f4 (lowest to –2). COMPUTE W3KFeff =(epa12f1r*0.040)+(epa12f2r*0.164)+(epa12f3*0.348)+(epa12f4*0.448). VARIABLE LABELS W3KFeff 'W3 K Parenting efficacy father—error adjusted'.
K	Parenting self-efficacy	4	Mother	*W4/K-cohort/Mother/efficacy MISSING VALUES fpa12m1r, fpa12m2r, fpa12m3, fpa12m4 (lowest to –2). COMPUTE W4KMeff = (fpa12m1r*0.001)+(fpa12m2r*0.132)+(fpa12m3*0.362)+(fpa12m4*0.505). VARIABLE LABELS W4KMeff 'W4 K Parenting efficacy mother—error adjusted'.
K	Parenting self-efficacy	4	Father	*W4/K-cohort/Father/efficacy MISSING VALUES fpa12f1r, fpa12f2r, fpa12f3, fpa12f4 (lowest to –2). COMPUTE W4KFeff =(fpa12f1r*0.027)+(fpa12f2r*0.128)+(fpa12f3*0.310)+(fpa12f4*0.535). VARIABLE LABELS W4KFeff 'W4 K Parenting efficacy father—error adjusted'.