Family stress, child care, and early cognitive development in the Millennium Cohort

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Family stress, child care, and early cognitive development in the Millennium Cohort

Part 1:

- Ingrid Schoon and Steven Hope: Material hardship, family processes and child outcomes

Part 2:

- Kirstine Hansen: The Relationship between Childcare and Cognitive Outcomes for Children of Working Mothers

Part 1

Ingrid Schoon and Steven Hope

Material hardship, family processes and child outcomes

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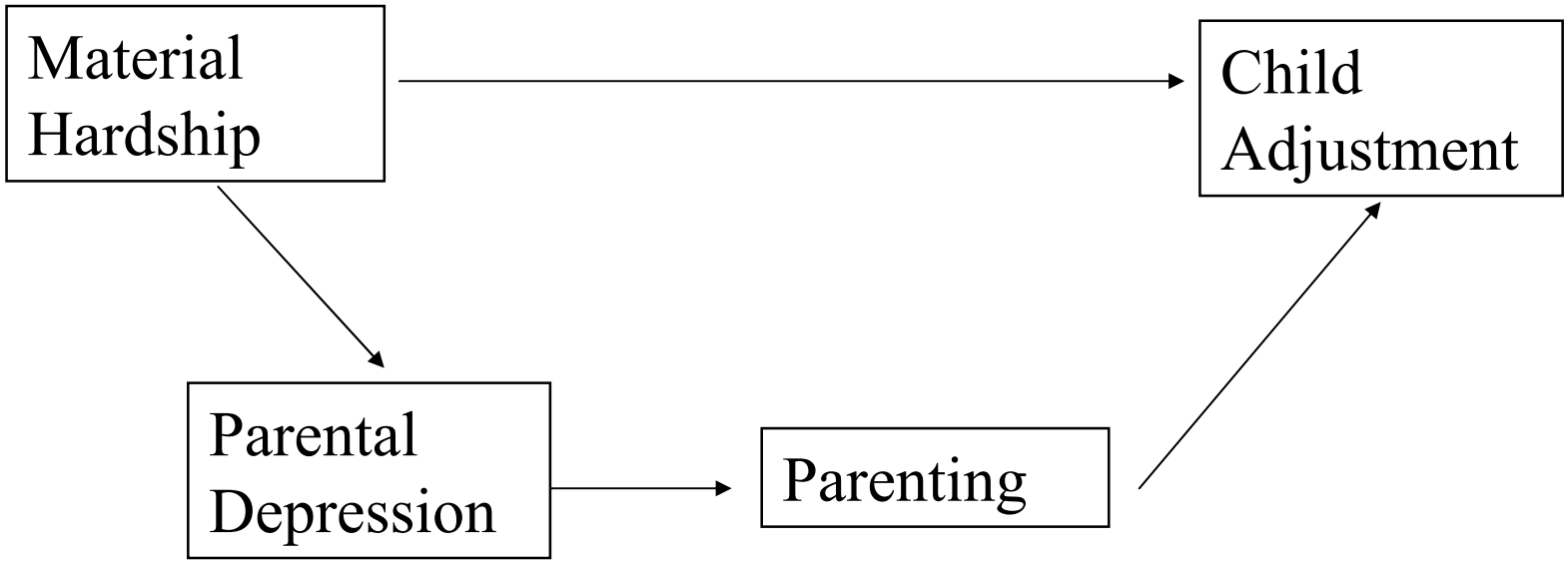
Research Questions

- Does the experience of material hardship affect family functioning as well as early cognitive development
- Are the effects of family poverty on child adjustment mediated through parental distress and parenting behaviour?

Pathways linking economic stress and child development

- **Family Stress Model** (Conger et al., 1992, 93; Elder & Caspi, 1988; McLoyd, 1989):
  - Links family economic stress to problematic adolescent development
  - Postulates that economic stress affects adolescent adjustment indirectly through family processes (i.e. through parental mood, relationship difficulties, and parenting)
  - application of model to study of adjustment among young children (Linver, et al. 2002)

The Family Stress Model



Linver et al., 2002

The Millennium Cohort

- 18819 babies born into 18553 families
- Babies were born between September 2000 and January 2002 in the UK
- At time of survey most babies were 9-month old
- Follow-up study at age 36 months

Indicators of Material Hardship

	Age 9mths %	Age 36mths %
Home Ownership (no)	33	30
Overcrowding (yes)	8	7
Receipt of income support (yes)	14	13
Low income (9 months <£10,400; 36 months <£11,000)	19	18
Access to a car / van (no)	13	12

Maternal psychological distress

- Age 9 mths: shortened version (9 items) of the Malaise Inventory (Rutter et al., 1970)
- 36 mths: Kessler K6 (Kessler et al., 2002)
- Both tests are:
  - → Self completion instruments
  - → good reliability (α >.80)
  - → Good validity (correlates with previously diagnosed depression and currently treated depression)

Parenting behaviour

- Mother-child relationship (15 item scale, Pianta 1992)
  - mother report (α = .77)
  - total score indicates overall positive emotional mother-child relationship

Child Adjustment

- Cognitive Adjustment
  - Bracken School Readiness Assessment BSRA (Bracken, 2002) - child assessment includes six subtests: Colors, Letters, Numbers/Counting, Sizes, Comparisons, and Shapes
  - British Ability Scales – Subtest Naming Vocabulary
- Behaviour Adjustment
  - Strengths and Difficulties Questionnaire (SDQ) - parental report
- Correlation between BSRA and SDQ: -.29

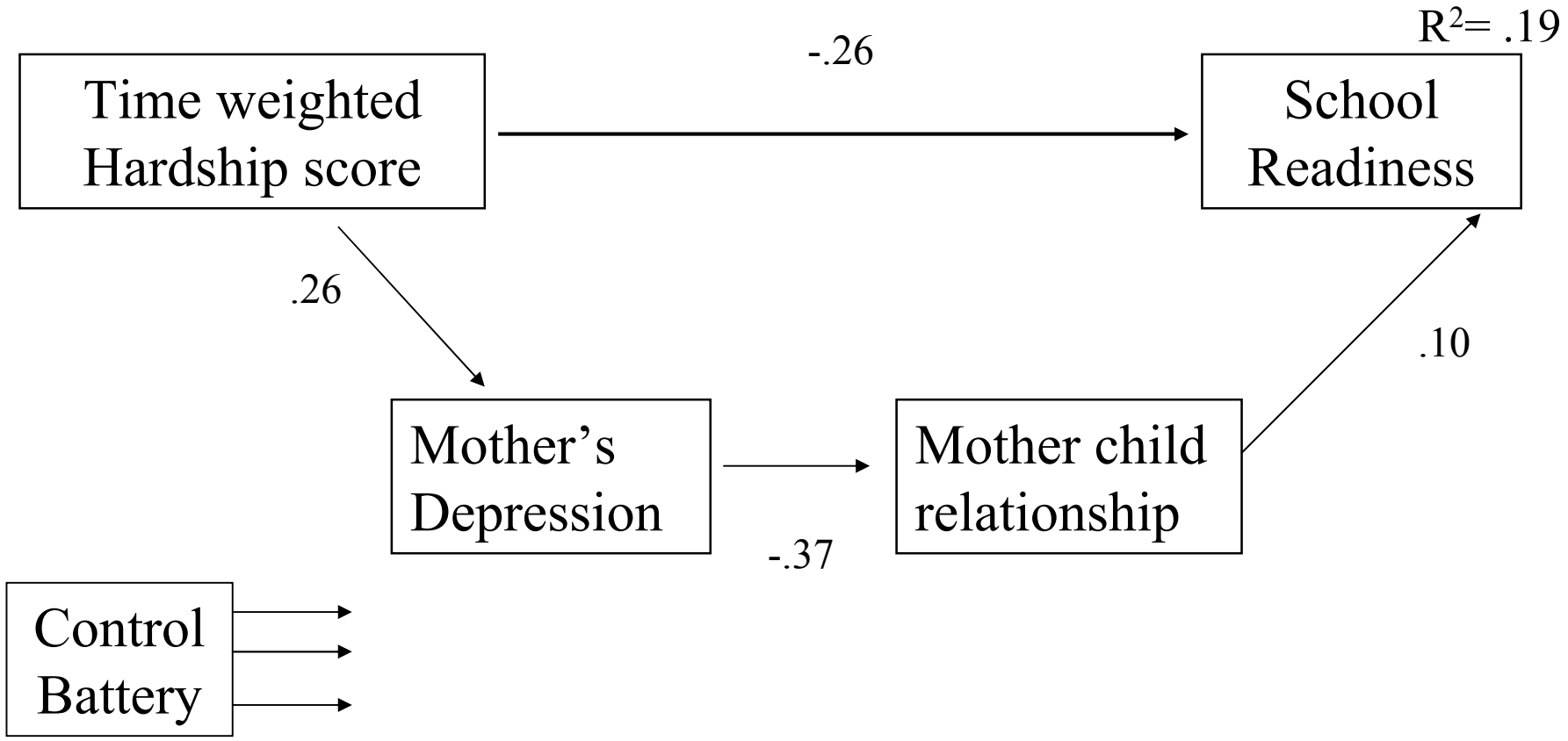
Control Variables

- Mother's age at birth of child
- Mother's education (below GCSE; GCSE and above)
- Mother's ethnicity (white versus other)
- Sex of child
- Birthweight (< 2500 grams)
- Prematurity (gestation < 37 weeks)

Direct Association between Hardship and Child Adjustment

	Beta	**Beta** **adjusting for control battery**
Hardship at 9mths and		
School readiness at 36 mths	-.34	-.25
Behaviour (SDQ) at 36 mths	.31	.20
Hardship at 36mths and		
School readiness at 36 mths	-.34	-.25
Behaviour (SDQ) at 36 mths	.30	.20

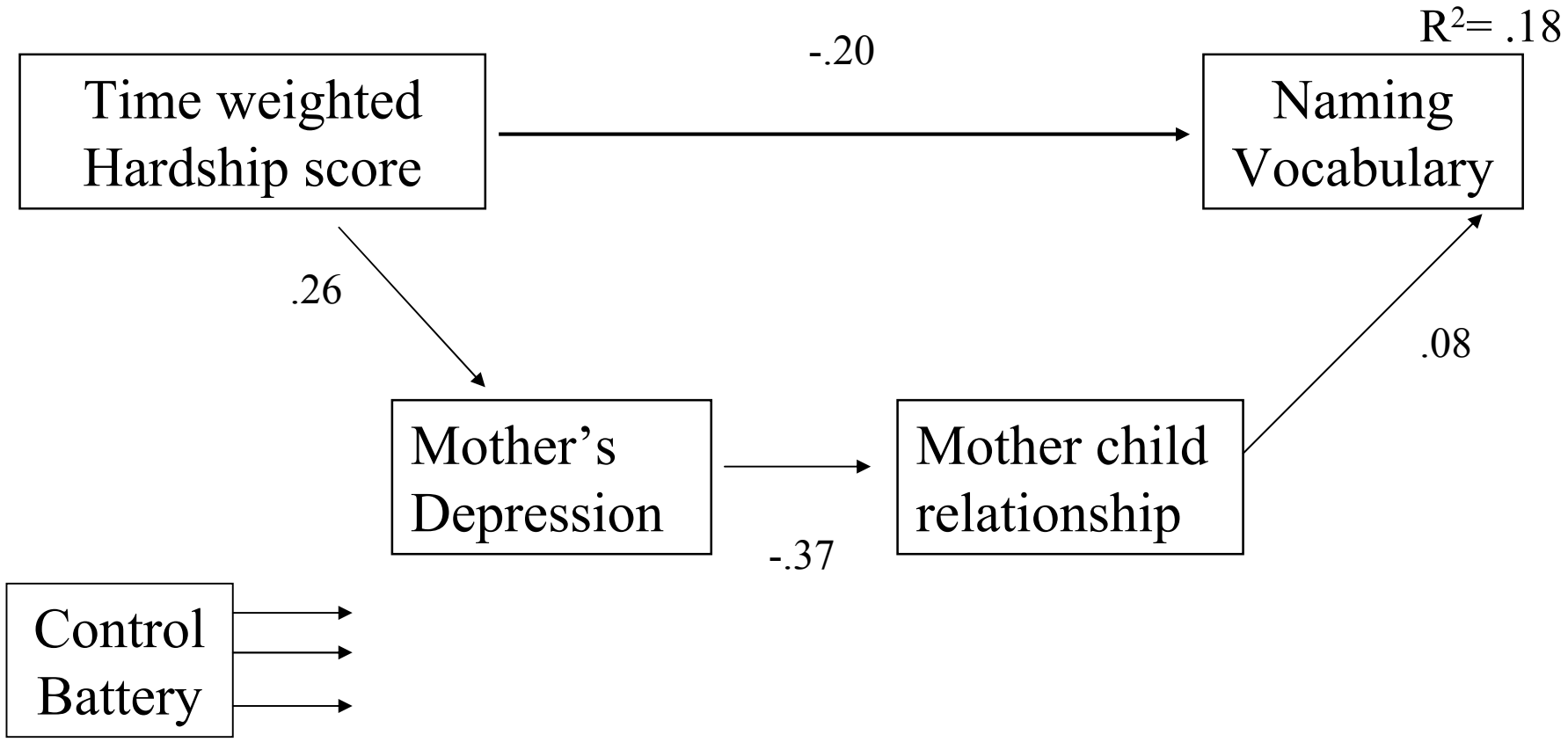
The Family Stress Model
Cognitive outcomes at age 3 years



Model Fit: (adjusted model including control variables and sample weights):

CFI=.998; rmsea=.019)

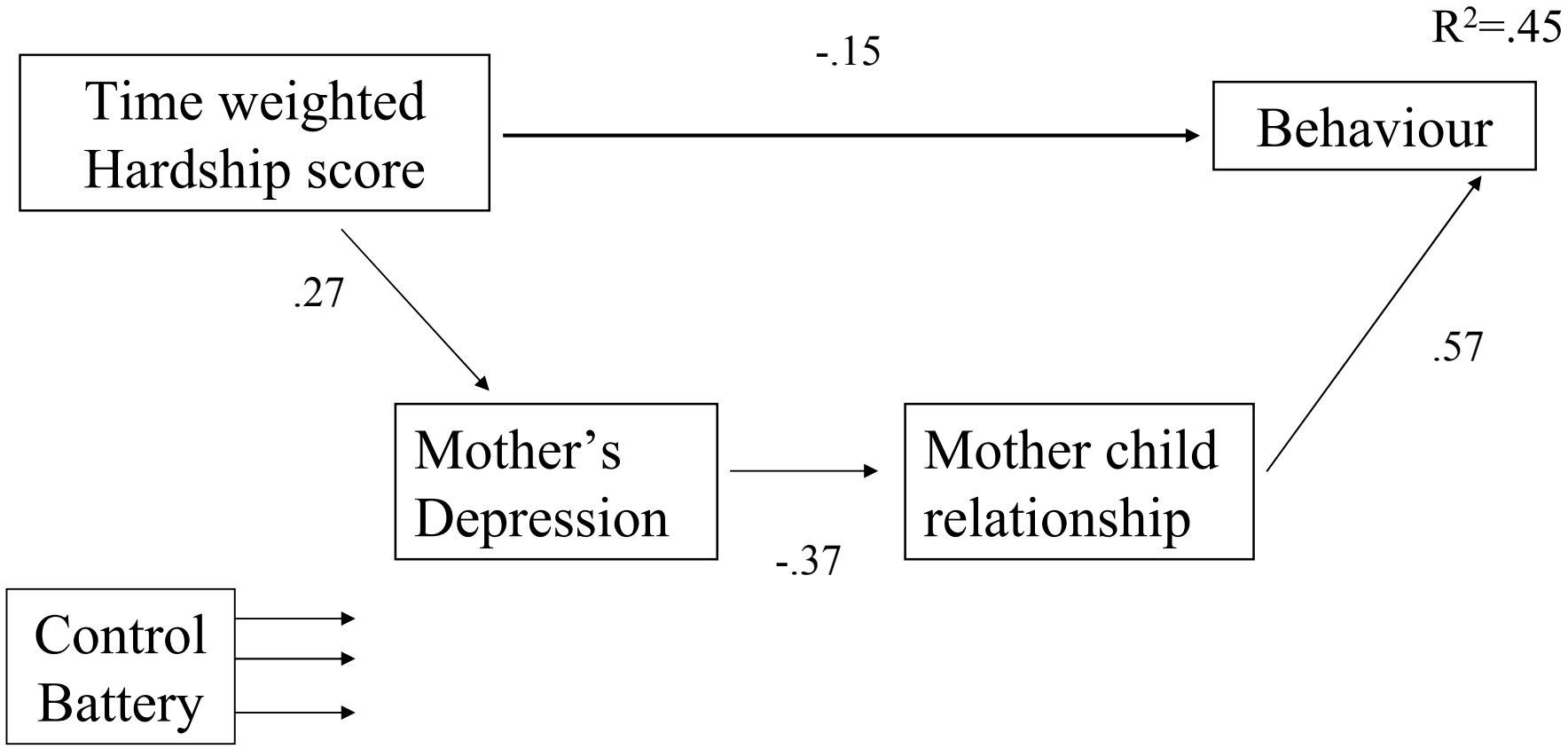
The Family Stress Model
Cognitive outcomes at age 3 years



Model Fit: (adjusted model including control variables and sample weights):

CFI=.998; rmsea=.019)

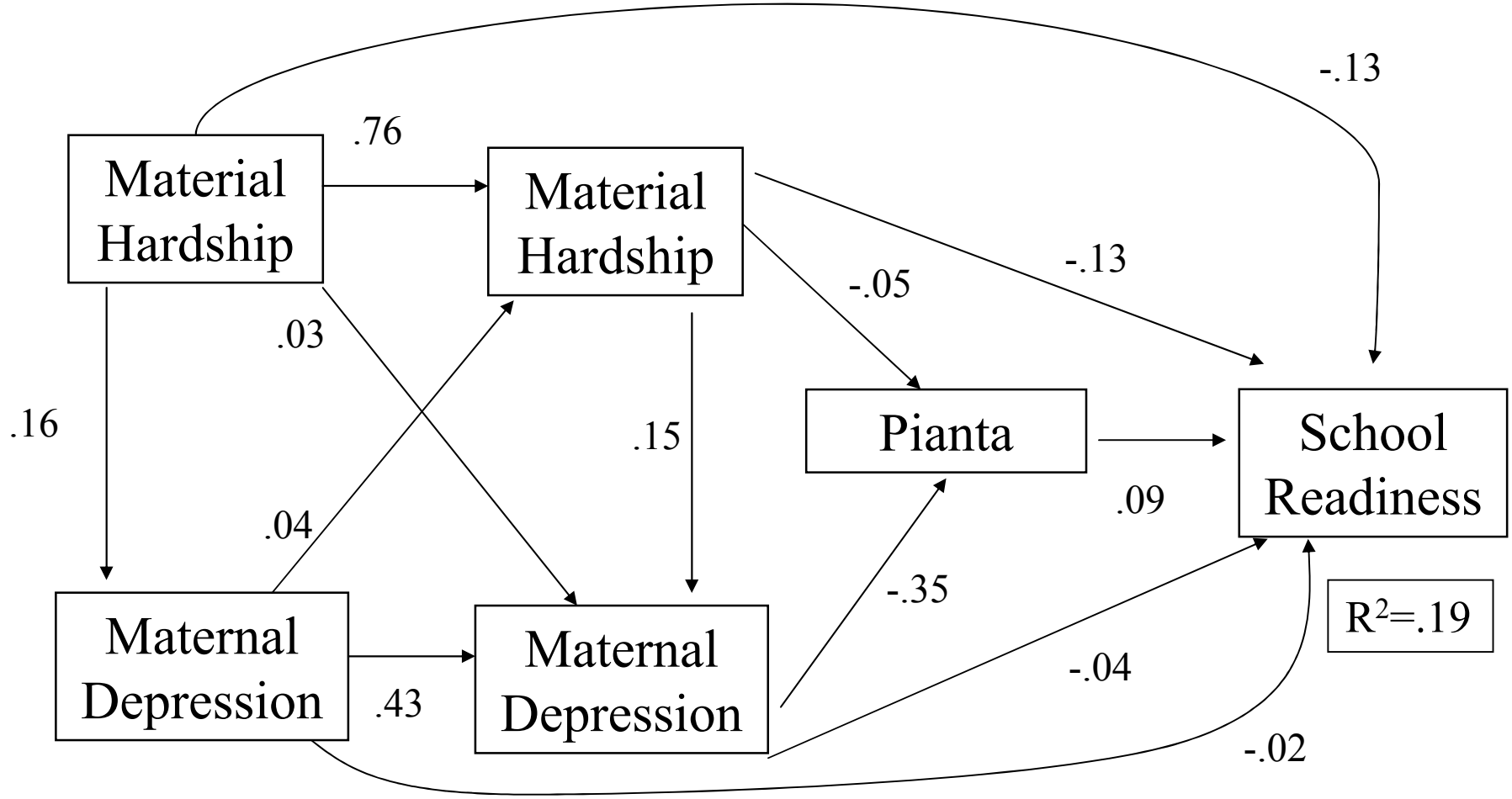
The Family Stress Model
Behavioural adjustment age 3 years



Model Fit: (adjusted model including control variables and sample weights):

CFI=.978; rmsea=.082)

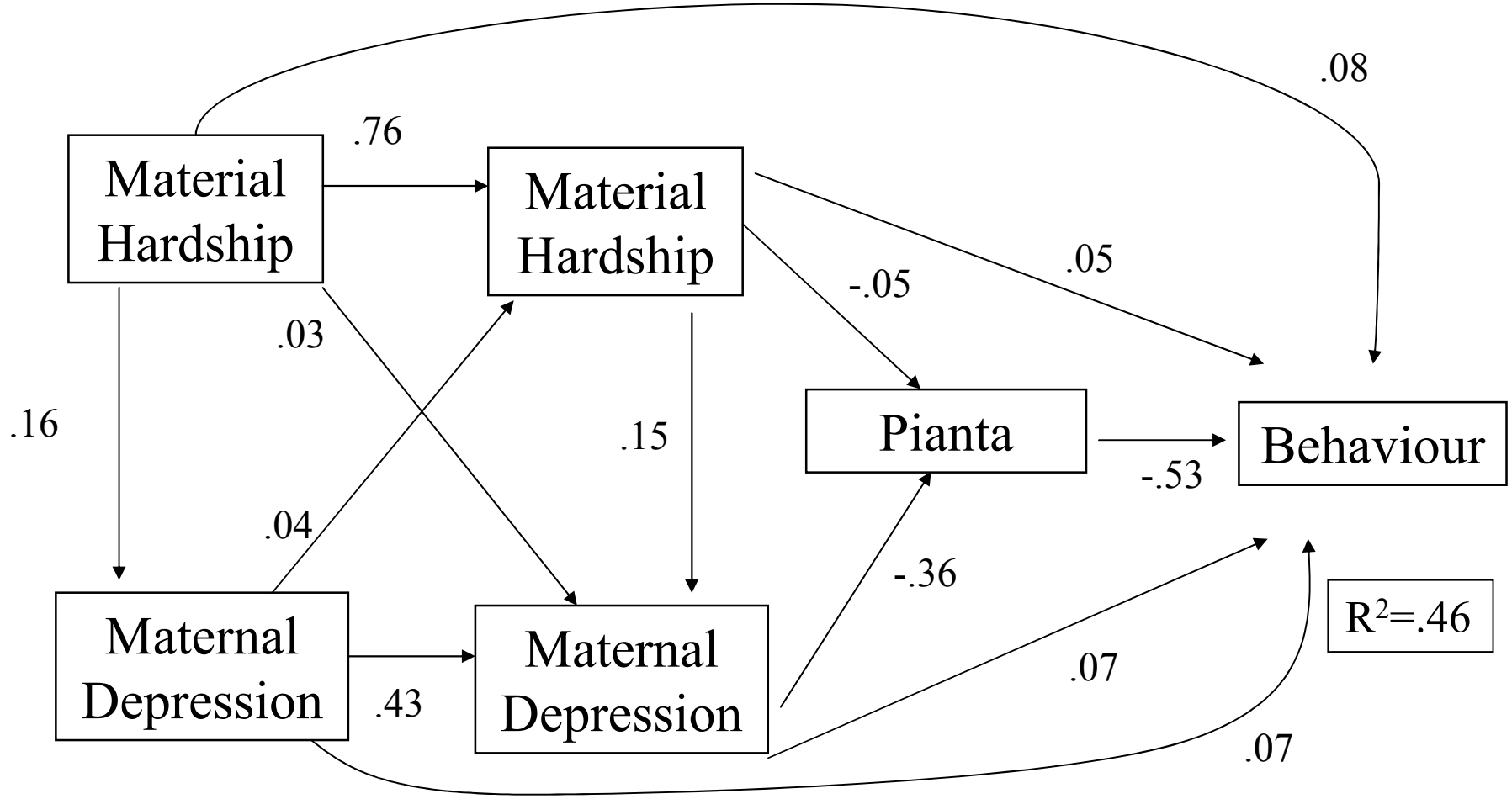
The Family Stress Model
Linking Age 9mths to 36 mths



Model Fit (adjusted model including control variables and sample weights):

CFI=.994; rmsea=.058)

The Family Stress Model
Linking Age 9mths to 36 mths



Model Fit (adjusted model including control variables and sample weights):

CFI=.995; rmsea=.055)

Summary

- The experience of material hardship:
  - effects both cognitive and behavioural adjustment
  - can exacerbate maternal distress
  - is indirectly related to less effective parenting
- Experiences in the family environment mediate the influence of material hardship on child outcomes (after controlling for socio-economic background and biological risk factors)
- Different mediating processes for cognitive and behaviour adjustment

Conclusion

- Family stress model is applicable for studying associations between material hardship, family processes, and child adjustment
- Family environment and parenting have significant influences on early child adjustment
- Importance of disentangling the mediating pathways for emotional and cognitive adjustment among children growing up in poverty

Part 2

Kirstine Hansen:
The Relationship between Childcare and Cognitive Outcomes for Children of Working Mothers

Considering other factors

- **Ingrid's work looked at family processes and child outcomes.**
- **Nowadays, many children are spending time outside of the family being cared for by figures other than their mother, even when they are quite young.**
- **The rest of this presentation will look at the association between childcare and children's outcomes.**

Literature

- The literature which looks at the effect of childcare on children's cognitive ability shows no consensus.
- But more recent literature suggests that it depends on the quality of the alternative care provided.

Childcare Quality

- Characteristics of childcare quality commonly found to be positively associated with child outcomes include:
  - Qualifications of care providers
  - Stability of staff
  - Structure and content of daily activities
  - Space and facilities

Formal versus informal care

- It is usually argued that formal care (nurseries/playschools etc) provides higher quality care than informal childcare arrangements (care by relative, friends etc).
- They offer qualified staff and a structured curriculum with specially equipped facilities.
- Recent empirical results tend to support this.
- Gregg et al.2005 show that children of mothers who worked full-time when they were under 18 months who attended day care centres appeared to be protected from any adverse effect of maternal employment.
- Bernal and Keane 2006 show that formal care may actually have a positive effect on children.

- In this presentation we examine associations between the type of childcare and child cognitive outcomes.
- With particular focus on the effect of formal care compared to informal care.
- We argue that there are potential reasons informal care may be negatively related to cognitive child outcomes compared to formal care:
    - Informal carers may give the child less attention.
    - Lack structure and content of daily activities.
    - They may be less skilled than mothers or formal carers.
    - Lack of resources.
    - The environment they live in may lack educational stimulation.
    - Lack of interaction with other children.

Informal care

- We also look within the informal care arrangements.
- Differentiating care provided by grandparents and that provided by others.

We are also aware that there are likely to be reasons why working mothers may use informal rather than formal care which we need to take account of:

- Informal care may be used by mothers:

  - Who cannot afford formal care.
  - Who live in areas with supply constraints (Paull and Taylor 2002).
  - Who are not fully informed about the benefits of formal childcare.

- Qualitative evidence suggests that parental decisions about childcare involve more factors than those relating to child outcomes. Parents tend to place greater emphasis on:

  - finding a safe and healthy environment
  - trust
  - flexibility
  - a convenient location and hours
  - dependability

For these Reasons we Construct the Following Hypotheses:

- Formal (informal) care will be:
  - Positively (negatively) associated with child cognitive outcomes.
- There will be no difference between grandparent care and other types of informal care.
- Once other factors are controlled for the difference between formal and informal care will be reduced to statistical insignificance

Early Childcare Data

- Measured at 9 months.
- Formal care: Nursery/creche, childminder, nanny/au pair.
- Grandparent care: Any grandparent care – mostly done by the maternal grandmother.
- Other informal care: Partner, other relatives, friends/neighbours

Childcare use by working mothers at 9 months

- Around 50 percent of MCS mothers are working by the time their child is 9 months old.
- A very small percentage are using self provision childcare whilst they are working.
- The others use some sort of non-maternal care.

Percentage using formal care as main care arrangement	40%
Percentage using grandparent care	36%
Percentage using other informal care	24%

Child Outcome Measures

- Measured at age 3
- British Ability Scale (BAS)
  - Naming vocabulary test
- Bracken School Readiness
  - Colours, numbers, comparisons, letters, sizes, shapes.

Descriptive Statistics 2: Mean Child Outcomes at age 3.

Main childcare use at 9 months	Cognitive Test	
	BAS	Bracken
All	78.3	108.9
Formal care	79.2	111.9
Grandparent care	78.8	107.8
Other informal care	76.0	105.6
Observations	5094	5094

Regression models

- We start with a simple model of our childcare measures (formal care, grandparent care) on our outcome measure (BAS or Bracken standarised score).

- We build our model sequentially adding in control variables which may affect our relationship of primary interest.

Basic Regression Results: BAS

- In the basic model we get positive and statistically significant coefficients on both the formal care measure and the grandparent care variable compared to other informal care.
    - Formal care: .243***(.040)
    - Grandparent care: .210***(.041)

- The difference between formal care and grandparent care is statistically insignificant.

Full Model Regression Results: BAS

- When we control for additional variables in our full model both coefficients are reduced in terms of magnitude but the grandparent care remains statistically significant compared to other informal care.
    - Formal care: .043(.042)
    - Grandparent care: .119***(.041)

- The difference between formal care and grandparent care is statistically significant.
    - Grandparent care: .076**(.037)

- To summarise: When our full set of control variables are added to the model grandparent care is positively associated with BAS vocabulary test scores compared to other types of care.

Basic Regression Results: Bracken School Readiness.

- In the basic regression of childcare on Bracken test scores both formal care and grandparent care attract positive statistically significant coefficients compared to other informal care.
    - Formal care: .421***(.045)
    - Grandparent care: .147***(.041)

- However, the difference between formal care and grandparent care is statistically significant and negative.
    - Grandparent care: -.275***(.039)

Full Regression Results: Bracken School Readiness, continued….

- When we control for additional variables in our full model the coefficient on formal care is reduced in terms of magnitude but remains statistically significant.
    - Formal care: .194***(.044)
- But the coefficient on grandparent care is reduced to statistical insignificance.
- Again the difference between formal care and grandparent care is statistically significant in the full model.
    - Grandparent care: -.145***(.038)
- To summarise: Formal care is positively associated with Bracken school readiness scores even after controlling for other variables.
- Once other variables are controlled for the effect of grandparent care cannot be distinguished from the effect of other types of informal care.
- Both are negatively associated with Bracken scores compared to formal care.

Conclusions so far - BAS

- For the BAS vocabulary score grandparent care is positively associated with outcomes.
- This makes sense because grandparents may not be able to provide the academic facilities or stimuli that formal care providers can but they are likely to talk and interact with children more frequently and on a one-to-one basis.
- Grandparents may talk to children more than other carers, not only because they have more time, but because they compensate for a reduction in physical activities with the child.
- There is also evidence that suggests that older people, adjusting for qualifications, tend to use grammatically correct sentences and to speak slower to children.
- Moreover, older people are less likely to tolerate grammatical errors and they resort more than younger people to corrective input when interacting with children which helps develop language.
- In a sense grandparent care is producing both a quality (of language production) and quantity effect.

Conclusions so far - Bracken

- For the Bracken School Readiness score formal care is associated with better cognitive outcomes than other types of care.
- Mentioned possible reasons for this at the beginning of the presentation: formal care is more likely to offer structure and content of daily activities, formal carers are more likely to be trained, more likely to have better facilities and resources and access to more educational stimulation.

Sub-Group Analysis

- It may be possible that the relationship between childcare and child outcomes differs for different groups.
- To test this the full specification model was run separately for different groups of children:
  - Gender
  - Parental education
  - Couple status of parents
  - Age of mother at child's birth
  - Ethnicity
  - Household benefit status

Sub-Group Regressions

Sub-groups	BAS		Bracken	
	Grandparent	Formal	Grandparent	Formal
Boys	.125 (.057)**	.076 (.059)	.027 (.057)	.154 (.065)**
Girls	.124 (.050)**	.017 (.056)	.079 (.052)	.243 (.055)***
Low Educated Mothers	.079 (.067)	.022 (.076)	-.040 (.064)	.083 (.080)
High Educated Mothers	.146 (.055)***	.056 (.053)	.108 (.054)**	.252 (.051)***
Lone Parents	.115(.139)	.068 (.157)	-.019 (.150)	.124 (.159)
Couples	.122 (.043)***	.041 (.044)	.061 (.040)	.201 (.046)***
Teen Mother	.026 (.091)	.124 (.128)	-.047 (.091)	.189 (.121)
Older Mother	.139 (.049)***	.069 (.048)	.073 (.043)	.232 (.049)***
Non-white	-.045 (.154)	.368 (.166)**	-.085 (.200)	.529 (.164)***
White	.128 (.043)***	.032 (.044)	.050 (.040)	.177 (.045)***
Parents on benefits	.093 (.100)	.047 (.098)	.110 (.095)	.198 (.109)*
No benefits	.129 (.043)***	.049 (.046)	.036 (.044)	.187 (.049)***

Conclusions so far 2:

- Analysis at the sub-group level suggests that the positive relationship between childcare type and child outcomes is significant for the more advantaged groups rather than the less advantaged groups.
- The main exception being ethnic minority groups and the on benefits group.
- While this latter result may offer hope, the fact that in general it is the more advantaged groups where associations between childcare and cognitive test scores are found, obviously has important policy implications for pre-school inequalities.
- However, this work is still in progress.

Thank you

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