Paternity Leave-Taking and Children's Developmental Outcomes: An Analysis Based on Structural Equation Modeling

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Research Questions

- Is paternity leave-taking related to preschool children's cognitive and behavioral outcomes in Singapore?

- If so, how do *fathers' involvement*, *father-child closeness*, and *family dynamics* mediate this relationship?

- Singapore policy & socioeconomic contexts:
  - 1 May 2013 – 31 Dec 2016: 1 week government-paid paternity leave + share 1-week maternity leave
  - From 1 Jan 2017: 2 weeks paid paternity leave + share up to 4 weeks of maternity leave
  - Social context:
    - Uneven and stalled gender revolution
    - High female labor force participation (80.8% in 2018), but still face occupational gender segregation (female-dominated jobs, 66% in "CSS" sectors) (MOM, 2020)
    - "Double burden" (paid & unpaid work)
  - Take-up rate of paid paternity leave policy is low
    - ~>50% of eligible fathers did not take PL from 2014-2019. (MSF, 2019)

- Extant literature in Western societies shows:
  - Paternity leave-taking → greater fathers' involvement→ Children's social, psychological, and behavioral development (i.e. Nepomnyaschy & Waldfogel, 2007; Haas & Hwang, 2008, etc.)
  - Paternity-leave-taking → Family dynamics (i.e. Petts, 2018; Petts & Knoester, 2019a; 2019b,etc)
    - Enhance family cohesion, father-child relationship;
    - Better quality of the marital relationship, mothers' report of relationship support, and co-parenting quality, reduce the risk of union dissolution;
  - Fathers' involvement (FI) ←→ Family dynamics (i.e. Norman et al.,. 2018; Schober, 2012, etc)
    - Low marital quality and high family conflict → less FI
    - More FI (esp. wives' perceived FI) in childcare and housework → better marital quality for both partners
- No study on examining how paternity leave-taking influences preschool children's developmental outcomes, esp. in an Asian context
  - More prevalent patriarchy
  - Higher gender inequality in the private sphere
  - Often shorter leaves than European countries

Theoretical Perspectives

Fathers' Identity Theory
- Built on lived experiences and interactions with family members
- Paternity leave provides a chance for fathers to participate in childcare → enhance fathers' identity and further FI

Linked Lives
- individuals are embedded within the lives of their family members
- Taking paternity leave also benefit other family members linked with the father
- Increased FI in early childhood → better outcomes in later life ("cumulative advantage")

Social Capital Theory
- Taking paternity leave, increased FI → father-child closeness, better monitoring and positive parenting behavior → better child's outcomes

Family Systems Theory
- family as a unit of organized and interdependent individuals.
- Taking paternity leave → enhance marital relationship, mother-child relationship → better child's outcomes

Hypotheses

- Hypothesis 1: Paternity leave taking (PL) and a longer leave have a <mark>direct</mark> effect in reducing children's behavior problems & promoting cognitive outcomes

- Hypothesis 2: PL and longer leave <mark>indirectly</mark> affect child outcomes *through increasing fathers' involvement, closer father-child relationship, and enhanced family dynamics*
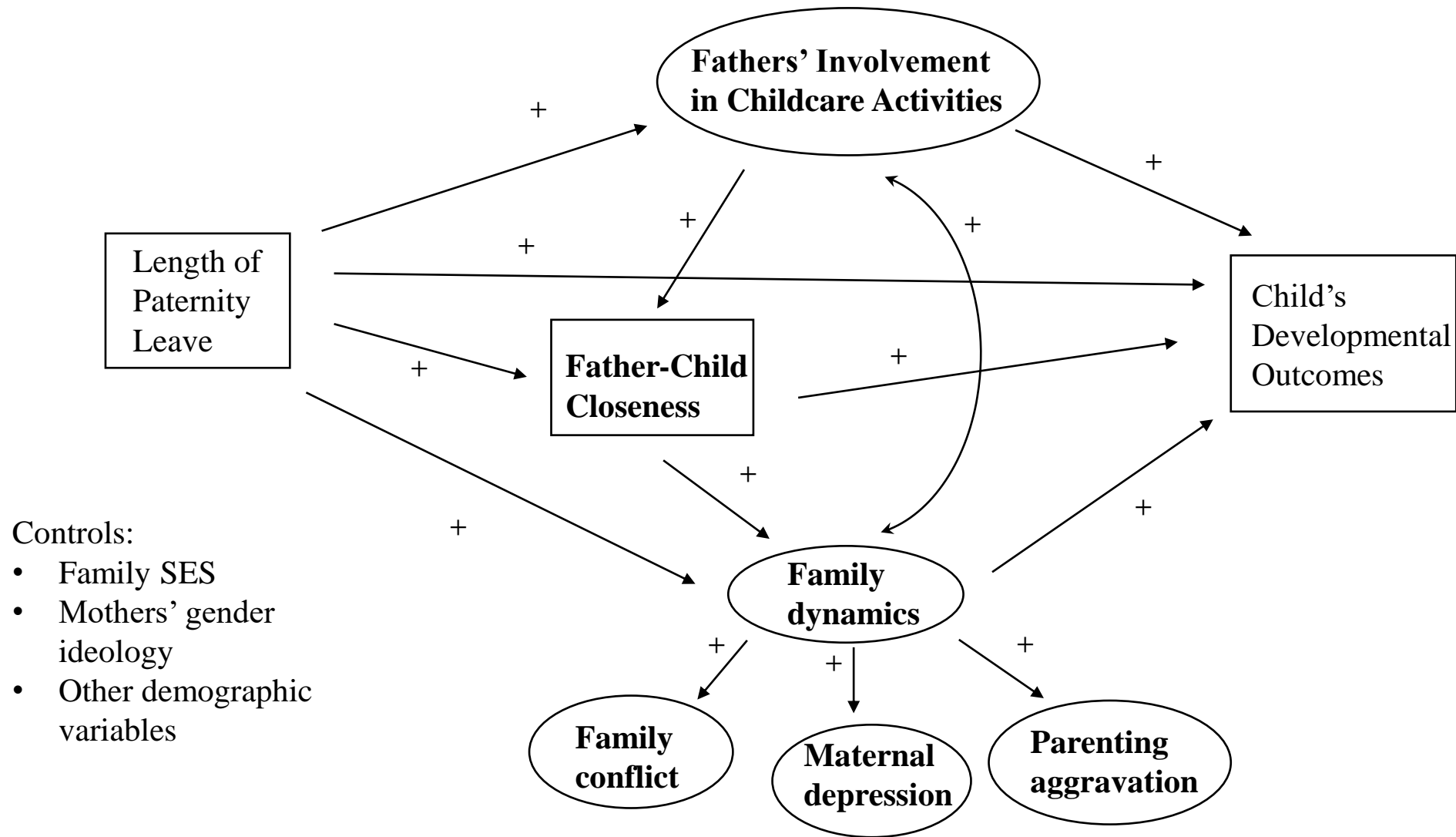
Conceptual Framework

Figure 1. Hypothesized model of paternity leave-taking on children's developmental outcomes

Data

- Singapore Longitudinal Early Development Study (SG LEADS)
  - nationally representative sample of families with children aged 0-6 in Singapore in 2018-19
  - *multi-stage stratified probability sampling* and oversampled *low-income* groups (sampling weights used in the analysis)

- Study sample: N=3,896 children (aged 0-6) living in 2,657 households
  - Children born on or after 1 May 2013
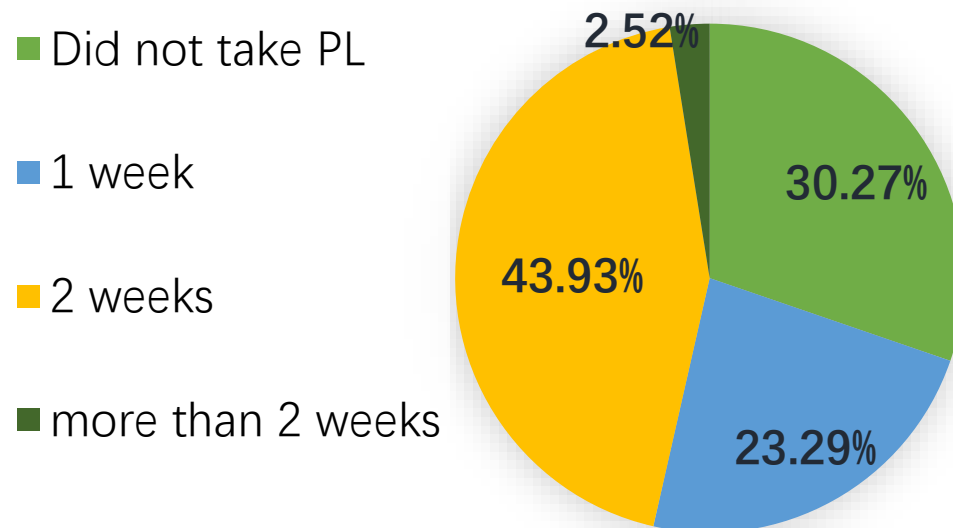 - live with biological or adoptive parents
  - PCG are mothers

Measurements

- **Dependent variables:**
  - **Children's behavior problem index**: Child Behavior Checklist,13 for EBPI ($\alpha = .85$), and 13 for IBPI ($\alpha = .87$)
  - **Children's cognitive outcomes**: letter-word identification & applied problems capability, from Woodcock-Johnson Test of Achievement fourth edition (WJ ACH IV, Form C), Singapore-normed z-scores

- **Independent variable:**
  - **Paternity leave-taking**: 0= "did not take leave", 1= "1-week leave", 2="2 and more weeks leave"

Legend:
- ■ Did not take PL
- ■ 1 week
- ■ 2 weeks
- ■ more than 2 weeks

Pie chart values: 2.52%, 30.27%, 23.29%, 43.93%

- **Mediators:**
  - **Fathers' involvement**: subscale of sharing childcare activities in HH, (1=*lowest level of FI* to 4=*highest level of FI*) (7 items); ($\alpha = .87$)
  - **Father-child relationship**: mothers' report of the father-child closeness (2 items), (1=*not at all close* to 4=*extremely close*)
  - **Family dynamics**: 3 latent constructs: family conflict ($\alpha = .76$), maternal depression ($\alpha = .87$), parenting aggravation ($\alpha = .80$)

- **Controls:**
  - **Family SES**: parents' educational level and employment status, fathers' occupation and race, and the total HH income in the past year.
  - **Mothers' gender ideology** (12-item scale) ($\alpha = .77$)
  - **Other demographic variables**: parents' age, fathers' race, child's age, gender, marriage duration, # of children under 18, and # of adults >65 living in the HH.

- Structural Equation Modeling (SEM)

- Advantages of using SEM:
  - Ability to examine the mediating mechanisms
  - Simultaneous examination of both direct and indirect paths, estimating each path after controlling for the effects of all other paths.
  - Use latent constructs with multiple indicators - reduce measurement errors, more powerful hypothesis testing
  - Full information maximum likelihood (FIML) fully efficient estimation, good for dealing with missing data
  - Has goodness-of-fit for the entire model

Results: Descriptive Statistics (selected)

| Variables	Mean (SD) or %	Range
Child's letter-word z-score	0.05 (1.63)	-5.19-7.95
Child's applied problems z-score	0.21 (1.78)	-5.28-6.48
Child's BPI	1.28 (0.26)	1-3
Child's EBPI	1.41 (0.34)	1-3
Child's IBPI	1.14 (0.24)	1-3
Child's age (year)	3.14 (1.65)	0.01-6.34
Child's gender		0-1
Male	50.57	
Female	49.43	
Child's race/ethnicity		1-4
Chinese	67.25	
Malay	10.21	
Indian	4.63	
Others	17.02	
Family conflict	1.54 (0.46)	1-3.8
Marital satisfaction	5.21 (0.86)	1-6
Father-child closeness	3.77 (0.47)	1-4
Maternal depression	1.49 (0.60)	1-4.67
Parenting aggravation	2.65 (1.07)	1-5
Fathers' involvement	2.84 (0.37)	1-4

Results: Behavior Problems
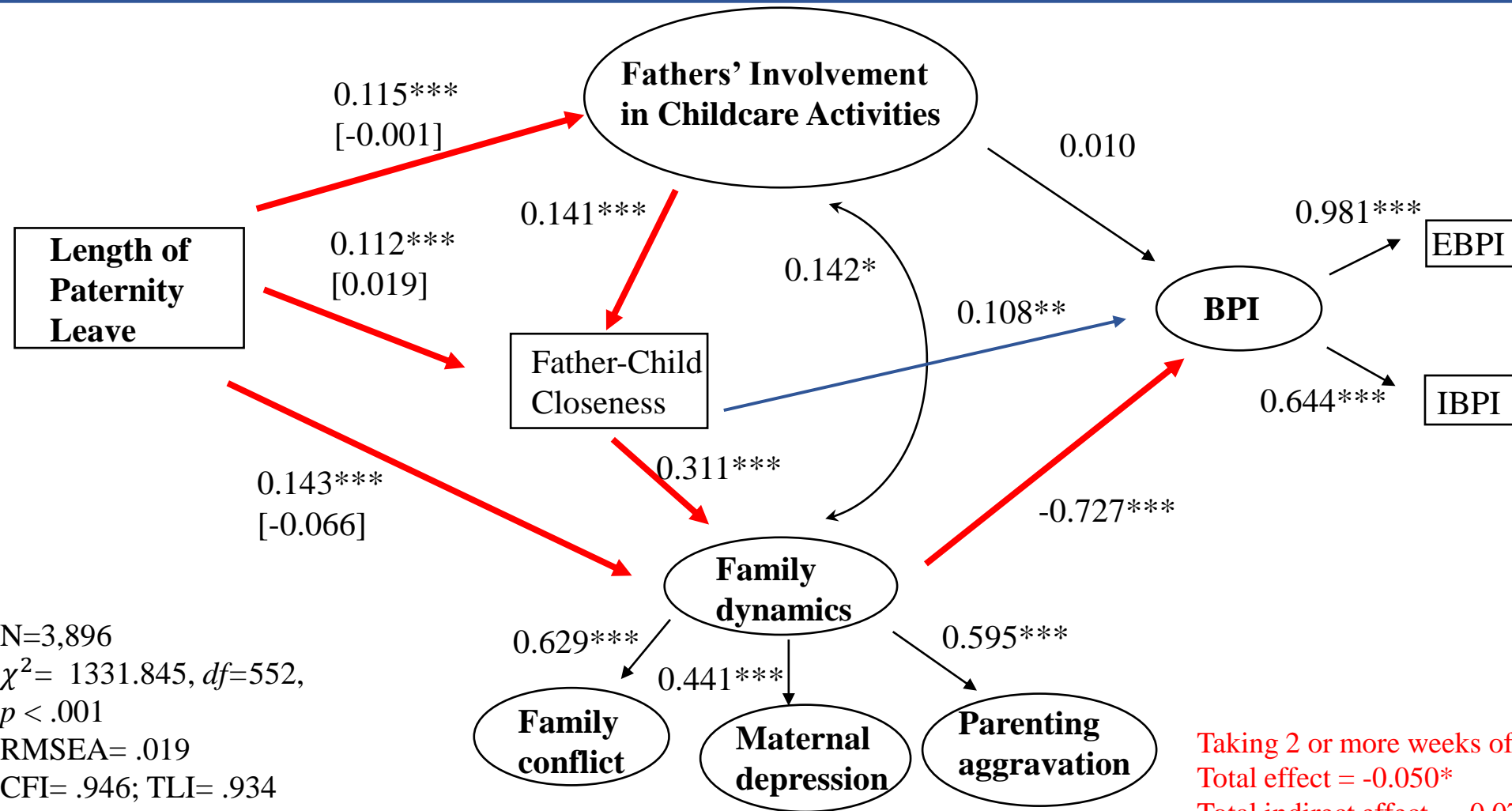
Figure 2. Standardized solutions for the structural model of length of paternity leave on children's behavior problem index.
*p< .05. **p< .01. ***p< .001.

Results: Applied Problems z-score
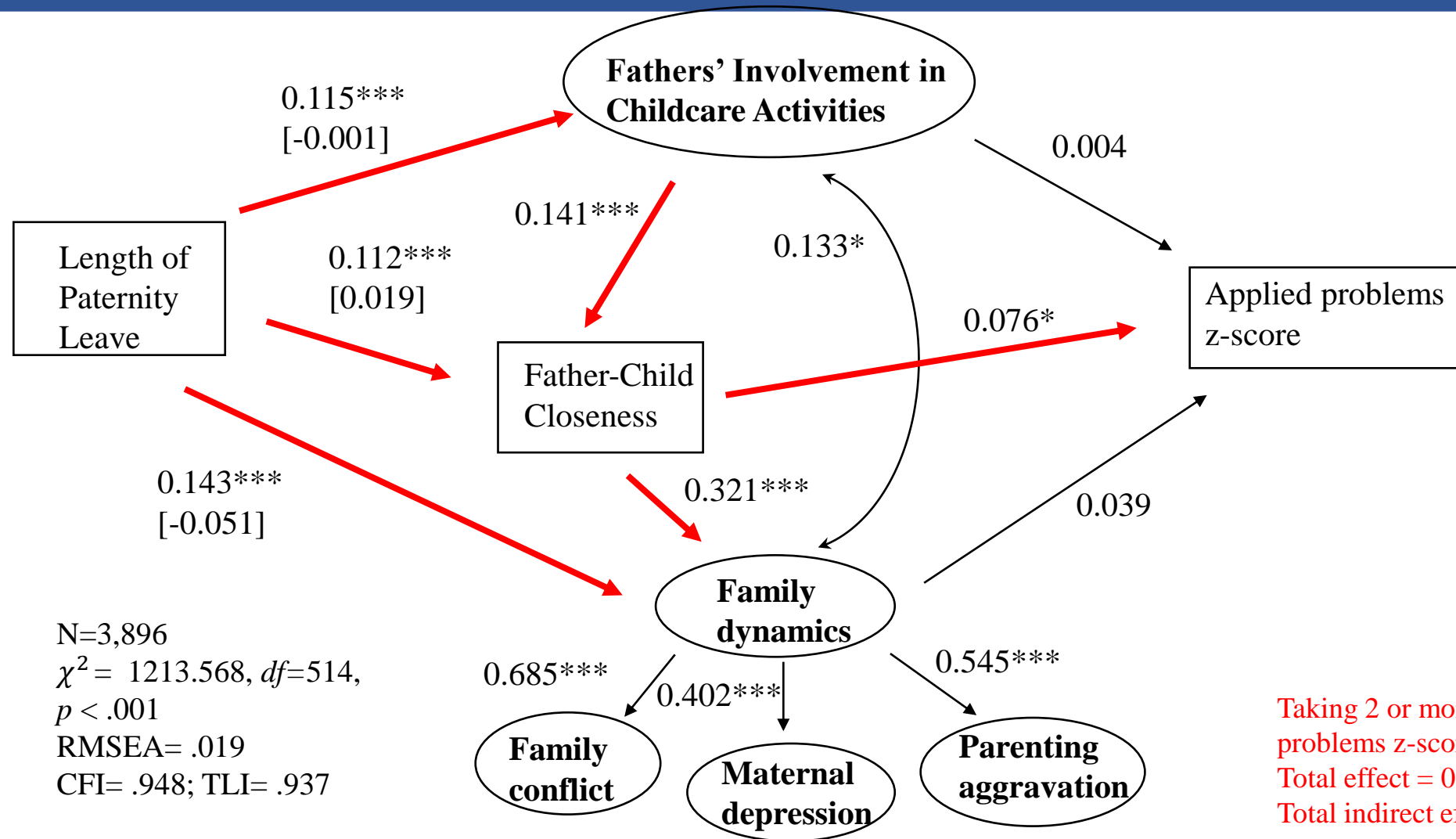

Figure 3. Standardized solutions for the structural model of length of paternity leave on children's applied problems z-scores.
*p< .05. **p< .01. ***p< .001.
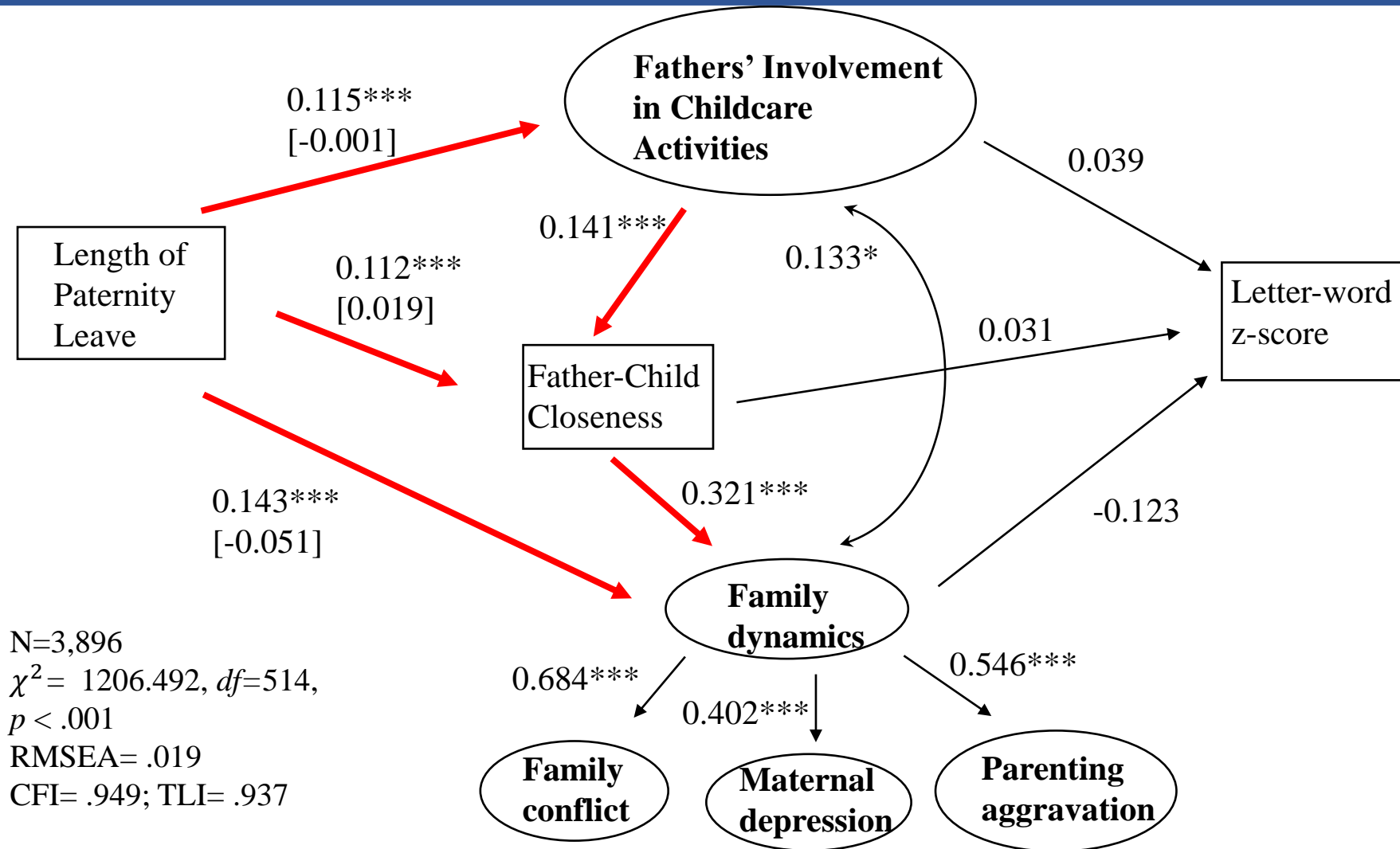
Figure 4. Standardized solutions for the structural model of length of paternity leave on children's letter-word z-scores.
*p< .05. **p< .01. ***p< .001.

Summary of Results

- No significant direct effect of length of paternity leave on children's behavior problems and applied problems capability.

- Only taking 2 or more weeks of paternity leave had a significantly positive effect on **fathers' involvement, father-child closeness, and family dynamics** across all models.

- Only taking 2 or more weeks of paternity leave had significant indirect effect in predicting children's **fewer behavior problems**, and **higher applied-problems capability**.
  - Through 2 or 3 mediators.
  - FI had no direct effect on children's outcomes, but through strengthening father-child closeness and family dynamics
  - Family dynamics may be the most important? (for BPI)

- No significant effect of paternity leave-taking on children's letter-word identification.

- Implications
  - Fathers' paternity leave-taking does not have a direct effect on children's outcomes, but only through enhancing the family processes (i.e. greater FI, closer father-child relationship, better family dynamics)
  - Even a leave as short as 2 weeks can affect gender norms and behavior
  - Provides empirical evidence on 4 theoretical perspectives, in an Asian context
  - Extend the length of PL and encourage fathers to take leave → better children's outcomes
    - Provide more time for fathers' engagement in childcare, social, and academic activities (i.e. currently, the effect of FI is positive but not significant)

- Limitations
  - Cross-sectional (wave 1) data, cannot firmly establish a causal relationship between mediator and dep vars
  - Lack of measurements on fathers' gender ideology and prenatal involvement (selection issue)

Thank You !

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For more information on SG LEADS: https://fass.nus.edu.sg/cfpr/sgleads/