

# Multiple Informant Data Using Discrepancy Scores and a Triadic Outcome Model: Positive Parenting and Children's Social Skills

---

Jade Logan, M.S.

University of Massachusetts – Amherst

Center for Research on Families

The Work and Family Transitions Project



# Objectives

---

- Self-Report Measures
  - Independent Variables: Positive Parenting (mothers' and fathers' reports)
  - Average Scores and Discrepancy Scores
    - Average gives level of positive parenting
    - Discrepancy gives difference between mothers' and fathers' self-reports of positive parenting
- Multiple Informant Data
  - Dependent Variables: Children's Social Skills (mothers', fathers', and teachers' reports)
    - Triadic outcome model



# Research Questions

---

- What is the level of agreement between multiple informants of children's social skills?
  - Latent score correlations generated in HLM statistical package
- Do the average (level) and discrepancy (difference) scores of positive parenting predict mothers', fathers', and teachers' reports of children's social skills.



# Why use Hierarchical Linear Modeling (HLM)?

---

## □ Dependence & Families

### ■ Independent Variable

- Correlations between mothers' and fathers' positive parenting style
- Measurement error in positive parenting scores

### ■ Dependent Variable

- Correlation between multiple reporters of the same child's social skills
- Measurement error in reports of social skills



# Approaches for Analyzing Dyadic Data

---

- Regression Approach
  - Create difference (discrepancy) scores by subtracting one score from another
  - Create average scores using MEAN function
  
- HLM (Discrepancy Model)
  - Accounting for dependency in parenting styles
    - Create difference (discrepancy) scores
    - Create average scores
  - Accounting for measurement error




# HLM Analyses Parenting as Outcome

---

- Level 1: (ID, positive parenting score, measurement error, indicator)
  - Measurement Error
    - $ME = (1 - \alpha) * \text{variance}$
  - Indicator
    - Used for discrepancy score
    - -.5 for mothers and +.5 for fathers

# HLM Analyses: Parenting as Outcome

- Measurement Error
  - $(1 - \alpha) * \text{variance}$
  - Example Mom Positive Parenting:  $(1 - .799) * .208 = .042$
- Level 1 Setup

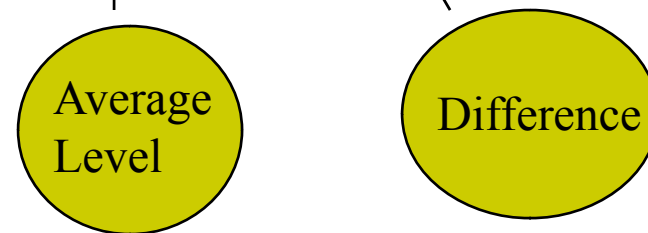


ID	ppar	pparme	mom	dad	Indicator
3	4.33	.042	1	0	-.5
3	4.50	.051	0	1	.5
4	4.50	.042	1	0	-.5
4	3.83	.051	0	1	.5

# HLM Analyses: Parenting As Outcome

---

- Fit an unconditional model or a model that has no level 2 predictors
- Level 1: Positive Parenting =  $\beta_0 + \beta_1 (\text{Indicator}) + r$
- Level 2:  $\beta_0 = \gamma_{00} + u_0$   
 $\beta_1 = \gamma_{10} + u_1$



Final estimation of fixed effects (with robust standard errors)

Fixed Effect	Coefficient	Standard Error	T-ratio	Approx. d.f.	P-value
For INTRCPT1, B0					
INTRCPT2, G00	4.328643	0.035377	122.359	100	0.000
For INDICATOR slope, B1					
INTRCPT2, G10	-0.114992	0.059588	-1.930	100	0.056

Final estimation of variance components:

Random Effect		Standard Deviation	Variance Component	df	Chi-square	P-value
INTRCPT1,	U0	0.31596	0.09983	94	510.25093	0.000
INDICATOR slope,	U1	0.50231	0.25232	94	356.18863	0.000

# HLM Analyses: Parenting As Outcome

- Residual File (example)

Average Level

Difference Between Mothers' and Fathers' Positive Parenting

ID	ecintrcp	ecindicator
3	4.397	.088
4	4.204	-.513
7	4.465	-.288
8	4.393	.332

# HLM Analyses: Social Skills Outcome

---

- Level 1
  - ID, reports of social skills, measurement error, & mom, dad, and teacher dummy variable

ID	ssklt	ssklme	mom	dad	teacher
3	52	7.54	1	0	0
3	35	7.70	0	1	0
3	55	6.60	0	0	1
4	60	7.54	1	0	0
4	61	7.70	0	1	0
4	68	6.60	0	0	1



# HLM Analyses: Social Skills Outcome

---

## □ Level 1

- $\text{Social Skills} = \beta_1 (\text{Mom}) + \beta_2 (\text{Dad}) + \beta_3 (\text{Teacher}) + r$

## □ Level 2

- $\beta_1 = \gamma_{10} + \gamma_{11} (\text{AvgPPAR}) + \gamma_{12} (\text{DisPPAR}) + u_1$

- $\beta_2 = \gamma_{20} + \gamma_{21} (\text{AvgPPAR}) + \gamma_{22} (\text{DisPPAR}) + u_2$

- $\beta_3 = \gamma_{30} + \gamma_{31} (\text{AvgPPAR}) + \gamma_{32} (\text{DisPPAR}) + u_3$



Final estimation of fixed effects  
(with robust standard errors)

Fixed Effect	Coefficient	Standard Error	T-ratio	Approx. d.f.	P-value
For MOM slope, B1					
INTRCPT2, G10	52.812538	0.739792	71.388	92	0.000
AVGPPAR, G11	11.027787	3.125843	3.528	92	0.001
DISPPAR, G12	-5.493088	1.590076	-3.455	92	0.001
For DAD slope, B2					
INTRCPT2, G20	50.682844	0.805760	62.901	92	0.000
AVGPPAR, G21	9.897198	2.383159	4.153	92	0.000
DISPPAR, G22	-0.946993	1.517687	0.624	92	0.534
For TEACHER slope, B3					
INTRCPT2, G30	55.489097	1.007134	55.096	92	0.000
AVGPPAR, G31	-1.227236	3.449071	-0.356	92	0.723
DISPPAR, G32	-1.799700	2.391136	-0.753	92	0.454



# Substantive Implications

---

- Mother's Reports of Children's Social Skills
  - As average level of positive parenting increases mothers' reports of children's social skills increase
  - Controlling for average level of positive parenting, as mothers' display fewer positive parenting techniques compared to fathers, mothers' reports of children's social skills decreases
- Fathers' Reports of Children Social Skills
  - As average level of positive parenting increases, fathers' reports of children's social skills increases
- Teachers' Reports of Children Social Skills
  - No significant findings



# Methodological Implications

---

- Useful method for those who study family relationships
- Accounting for the shared experiences of mothers, fathers, and children
- Can apply technique to independent and dependent variable
- Can extend it over time.